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## THE MEANING OF PHILOSOPHY (I.).

By

BERNARD MUSCIO, M.A., Professor of Philosophy,  
University of Sydney.

### I.

**S**UGGESTED definitions of philosophy have attempted to indicate its nature in one or other of three ways, namely: (a) by reference to *the motives that prompt it*, (b) by reference to *the content of its problems*, that is to say, its subject matter, (c) by reference to *its method*.

The earliest use of the word, which is attributed to Pythagoras, a Greek thinker of the sixth century B.C., implies a definition of philosophy by reference to *the motives that prompt it*; for Pythagoras, in calling himself a philosopher, meant that he was a lover of knowledge rather than a wise man, that his life was actuated by the *desire to become wise*. This etymological sense of the term has perhaps never been entirely absent from it. When it is emphasised, philosophy is characterised as the pursuit rather than the possession of knowledge. Again, when Plato and Aristotle said that philosophy arose in wonder or curiosity, they were implying a definition of it by reference to *the motives that prompt it*: an inadequate definition, however, for the reason that curiosity prompts all sorts of things and not philosophy only, as Plato saw (*Rep.* 475).

Of definitions specifying the nature of philosophy by reference to *the content of its problems*, the following may be mentioned: that of Plato, that philosophy investigates "being" as distinct from "becoming"; that of Kant (and others) that philosophy is concerned with God, freedom, and immortality; that of Shaftesbury, that philosophy is the "study of happiness"; that of Comte, Spencer, Paulsen, and others, that philosophy has to co-ordinate the results of the special sciences.

Of definitions specifying the nature of philosophy by reference to *its method* may be noted that of James, that metaphysics (meaning broadly philosophy) is only a specially persistent attempt to think consistently and clearly; and that

of Ferrier, that philosophy is "reasoned truth"—where the implied method is *reasoning*, which Ferrier indicated by adding: "It is more proper that philosophy should be reasoned than that it should be true."

Among such diversity of conception and definition it may be asked: Is there not a *correct* conception of philosophy?

## II.

In answering this question, it is important to understand what exactly it is that any given definition of philosophy is intended to define. For it may intend to define either of two things, namely: (1) *all* those products of thought that have come to be termed philosophy, or (2) *that particular* product of thought which the framer of the definition considers to be the *true* philosophy. Thus, when Bertrand Russell said (*Analysis of Mind*, p. 210) that the study of metaphysics consists of learning verbal associations to such words as entity, he intended to characterise the various philosophical systems of the past. On the other hand, when he called a certain book of his *The Problems of Philosophy*, he implied a different definition of philosophy; for since this book does not mention certain traditional philosophical problems, the definition of philosophy implied by its title and contents taken together is a definition of what, in Russell's opinion, philosophy *ought* to be—that is, of the *true* philosophy.

## III.

In asking the meaning of philosophy, we are not asking what this or that philosopher considers to be the true philosophy; which would only be to ask whether this or that philosopher is a realist, idealist, sceptic, etc. We are asking what is the nature of philosophy, not what is the nature of this or that philosophical system. How can such a question be adequately answered? Reverting to the three methods mentioned above for defining philosophy, let us consider which, or which combination, of these, will yield the most adequate definition.

(a) The question whether philosophy can be defined by reference to the motives that prompt it involves a psychological discussion beyond the scope of this article. The insufficiency, as a definition, of saying that philosophy begins in wonder, has been noted above, and all that need be added here is this: even if it is possible to define philosophy adequately by reference to the motives that prompt it, it is also possible to define it adequately otherwise, as will be maintained below.

(b) It seems impossible to define philosophy adequately by reference to *the content of its problems*, though most suggested definitions have proceeded upon this method. The difficulty is that the problems of philosophy have differed with different philosophers and have changed from one age to another. An interesting feature of the history of philosophy is that there has been a steady transference of problems from "philosophy" to "science." For instance, the early Greek philosophers were concerned almost exclusively with problems that are now the problems of physics: which explains the fact that physics used to be, and is sometimes even to-day, called "Natural Philosophy." It could be shewn in detail that it is impossible to include the content of all the problems that have been dealt with by philosophy in any single conception; but it will perhaps be sufficient here to quote Windelband's statement (*History of Philosophy*, p. 9, Eng. trans.) that philosophy has "no... subject matter common to all its periods."

While this is so, philosophical problems have always been *broad and general* and have tended to embrace the *whole* of things. This aspect of philosophy is expressed in Plato's statement, that the philosopher is *the spectator of all time and existence*, and in Spencer's, that philosophy is *completely unified knowledge*, and in Paulsen's, that philosophy is *the sum total of scientific knowledge*. It has sometimes led the philosopher to appear ridiculously pretentious to the scientist, who, working patiently, and perhaps for months or years unsuccessfully, upon some minute problem of fact, can only shrug his shoulders at the idea of a man who has elaborated a theory of the *Universe*, wonder how it was done, and perhaps think the worst. The desire to obtain a complete view of reality has sometimes resulted in premature theories. It has obviously also been a spur to progress. Still, no attempt is here made to justify it: we are merely noting an actual characteristic of philosophical investigations. It may be added that the large scope of philosophical problems is so characteristic that it has resulted in *any* broad discussion of problems, including problems of natural science, being qualified as philosophical. While, then, we cannot define philosophy adequately by reference to *the content of its problems*, a satisfactory definition should indicate the broad scope of these problems.

(c) There remains the third of the above-mentioned ways of defining philosophy—that which specifies the philosophic *method*. If this be followed, there can at least be little controversy concerning the general nature of the resulting definition, which will state that philosophy proceeds by the method

of "reasoning." Perhaps the most adequate conception of philosophy may be obtained by realising the significance of such a definition, which would be essentially the same as that of Ferrier's, that philosophy is "reasoned truth."

Ferrier's definition, however, may seem to imply that all propositions occurring in philosophy are true, and may consequently be judged unsatisfactory—as it certainly would be if this had been intended. But that this was not intended is clear from the explanatory addition, that "it is more proper that philosophy should be reasoned than that it should be true." Ferrier is saying that, whatever else you have, you never have philosophy unless you have "reasoning."

A more important point is that Ferrier's definition may suggest that reasoning is the exclusive property of philosophy, and to such a view the scientist at least would rightly object. Occasionally we come across the opinion that nothing is now required in science except experiment; but the idea that the laboratory has replaced reasoning once and for all is a fiction which acquaintance with any branch of experimental science rapidly dispels. However, there is no ground for dispute here. Reasoning is made use of in science as well as in philosophy: neither has the monopoly of it, either when it is good or when it is bad.

The requirements of a formal definition of philosophy thus seem to be that it should stress reasoning as the method of philosophy, that it should distinguish between philosophy and science (since both use reasoning), and that it should indicate the broad scope of philosophical problems. Such a definition might run somewhat as follows: *Philosophy is the reasoned study of such general problems about existence as cannot be solved experimentally.*

It must be understood that we cannot dogmatise as to what problems will in the future be found capable, and what problems will remain incapable, of experimental solution. The suggested definition would mean that the problems falling within the scope of philosophy at any time are such as *at that time* cannot be solved experimentally.

#### IV.

The suggested definition of philosophy allows us to understand that traditional conception of the philosopher, according to which he is an absent-minded, though as a rule relatively harmless individual, living an unsocial sedentary

existence, and evolving Universes out of his head; busy with questions having no meaning or no answer or no value—like “a blind man in a dark room looking for a black hat that is not there.” An unpractical character has been fastened upon the philosopher from the very first—if we may believe the story about Thales, the first Greek philosopher, that he stumbled into a well while watching the heavens.

Now *any* man who concentrates upon problems will tend to be unpractical, for the reason that there are limits to the capacity of the mind to distribute its attention. And so we find that it is not only philosophers who have been regarded as unpractical. In any case, the charge has not been true of all of them. But it is easy to understand that a man who, like the philosopher, follows reason, is often led to think very differently from those who do not think at all. A striking illustration of this is the “rigid monism” maintained by the early Greek philosopher Parmenides, by whom reality was supposed to be a continuous, homogenous, indivisible, *plenum*. If such a theory be true, the appearance of multiplicity in the world of sense—the apparent existence of innumerable “things” distinct from one another—must be illusion; and this consequence, preposterous as it may seem to be, Parmenides accepted. “Reasoning” here led to a conception of reality in entire contradiction with that suggested by the senses, and the philosopher said that *the latter* must therefore be wrong. This submission to the judgments of reason is the genuine philosophical note. It can be recognised anywhere. But this is not to say that the reasoning of Parmenides, or of any other philosopher, is necessarily right reasoning.

Further, once the mind has known the beauty and absolute finality of demonstrative reasoning, utterly different as it is from the compromise conclusions of conflicting sensory interests, it desires nothing so much as to live continually in that world in which such reasoning may be indulged. Sensory experience, which to mankind at large is the type of all that is real, then tends to be depreciated and neglected. The desire for philosophy may be thwarted by an unfavourable environment, material or social, or by incompatible desires; but when a man has fully realised the absolute finality of reasoning, he possesses for ever afterwards the consciousness of a standard from the application of which nothing whatever can be permanently exempted. This means that the philosopher, like the scientist though in a higher degree, has generally tended to diverge from “common sense,” and hence has been thought unpractical.

## V.

It may perhaps be mentioned finally that "philosophy," as constituting courses of study at Universities, is often very largely *history of philosophy*; that is to say, it is the study of the past reasonings of the human mind concerning general problems about existence. Now the history of philosophy is conceived differently according to the theory held to be the true philosophical theory. Hegel conceived it as so many stepping-stones to Hegel; Lewes as a medley of intellectual errors to which the reign of natural science will put an end. It may be said here that, even if a particular philosopher be a complete metaphysical sceptic, the study of the history of philosophy, with its elucidation and examination in the light of modern logic of the principles by which philosophical systems have been constructed, possesses great cultural value. It brings to consciousness the principles with which the intelligence normally works unconsciously, and by so doing enables us to control them. And further, it is necessary if we are to attain to a conception of the human mind that is at all complete; for mind has expressed itself in philosophy just as it has expressed itself in social institutions or in art.

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**NOTES BY THE WAY. No. 1. A Philosopher's view of Education.**

For all your stimulation and guidance the creative impulse towards growth comes from within and is intensely characteristic of the individual. Education is the guidance of the individual towards a comprehension of the art of life; and by the art of life I mean the most complete achievement of varied activity, expressing the potentialities of that living creature in the face of its actual environment. This completeness of achievement involves an artistic sense, subordinating the lower to the higher possibilities of the indivisible personality. Science, art, religion, morality, take their rise from this sense of values within the structure of being. Each individual embodies an adventure of existence. The art of life is the guidance of this adventure. The great religions of civilisation include among their original elements, revolts against the inculcation of morals as a set of isolated prohibitions. Morality, in the petty negative sense of the term, is the deadly enemy of religion. Paul denounces the Law, and the Gospels are vehement against the Pharisees. Every outbreak of religion exhibits the same intensity of antagonism—an antagonism diminishing as religion fades. No part of education has more to gain from attention to the rhythmic law of growth than has moral and religious education. Whatever be the right way to formulate religious truths, it is death to religion to insist on a premature stage of precision. The vitality of religion is shown by the way in which the religious spirit has survived the ordeal of religious education.

A. N. WHITEHEAD on Freedom and Discipline. (*Hibbert Journal.*)

## THE MEANING OF PHILOSOPHY. (II.)

By

W. ANDERSON, M.A., Professor of Philosophy,  
University College, Auckland, N.Z.

IN the case of a *traditional* activity like philosophy we can only expect to find a partial apprehension of its nature in the earliest forms in which we must still recognise its presence. Nevertheless, its present pursuit requires that there exist, whether for guidance or as a basis for criticism, some historic formulation of the tradition in which that partiality has been surmounted. The kind of completeness that is here in view comes out in the distinction between wisdom and knowledge that the name of philosophy suggests. For the Greek tradition the subject-matter of philosophy cannot be less complex than the situation described in the "practical syllogism" of Aristotle—reasoning with an act for its "conclusion." Neglecting Aristotle's account of the pursuits of man become God instead, here is a view of human life as (a) a form of activity, relevant to the recognition, (b) that something is good, and (c) that something is a means to that. Knowledge is evidently a factor in the activity, but wisdom alone embraces the whole.

The practical syllogism, we note, involves opinion on two points. And the doctrine is that wherever there is opinion there must be the possibility of knowledge, or that there is knowledge and the possibility of realising it. The realisation, however, comes in the activity. In modern terms, self-realisation is the form of knowledge—a consideration which ought incidentally to dispose of the charge of "intellectualism" often brought against the philosophic tradition. Again, the self-reference of the main activity is directly implied in its dependence on knowledge—to know is to know that we know.

Philosophy, then, is the theory of practice. Why "theory" and not "science?" Because science has come to be identified with a particular one of the elements we have discriminated within the whole activity, namely with the erection of our opinions about the relations of means to ends into "laws of causation." By what right, again, do we propose a theoretical attitude towards the very activity within which knowledge has been distinguished as an element? The answer is that the attempt to realise the knowledge that is claimed in human action is itself the theory of the action. All forms of knowledge or its pursuit interpenetrate.

It may appear that this conception of philosophy places it on a comparatively low intellectual level. What is "true enough for practical purposes" is commonly understood to fall short of scientific knowledge. But in truth no theoretical analysis can possibly be too rigorous or exhaustive for practice. Whatever belief, "scientific" or otherwise "positive" a person may hold on any matter of fact, no sooner does he act on it than he ventures a whole world of supplementary judgments. He brings his belief under the idea of the good. He incurs moral responsibility for his estimate of the urgency of determining policy, here and now, by reference to such facts.

But the real meaning of the current phrase is wholly in agreement with this. It guards against the definitely unphilosophical view for which every advance in scientific analysis fatally entails a corresponding alteration in the given department of practice. The existing practice is, on this view, merely the "application," in the sense of a sort of isolated discharge, of such and such facts or theories held so that a further range of facts or a new theory must have a different discharge. But if the new theory is truer than the old, it will be a truer account of the existing procedure and why it has succeeded in realising its end. What science secures is greater freedom, rather than change, in practice.

Thus outlined, the philosophical tradition enables us to identify those contemporary tendencies from which problems may be expected to arise whose solution would take a philosophical form. The classical programme comprises as elements pursuits which have admitted of a certain isolation. We have ideals of natural knowledge and ideals of power. The problems of philosophy should centre round the bearing on these pursuits of ethical principles.

"Judgments of fact," then, have been sharply distinguished from "judgments of value," and both from the activity to which they are incidental. In the name of science men seek knowledge in a form impartial to human desires and hopes. On the other hand a great deal more appears to be demanded—and supplied—by way of explaining human action than is comprised in the "reasons for" it.

The elementary form of experience, we are told (and can in a sense understand from the classical tradition), is found in connection with our effort to realise our purposes. We encounter obstacles. Gradually we come to discriminate circumstances which thus hinder us from those which do not. We manage to recognise standing conditions favourable to the

appearance of a desired state of affairs. This genesis of causal laws would seem, it may be noted, to account for the persistent belief that cause precedes effect in time.

A. Judgments of fact, then, are the recognition that some of these connections are reliable. The discrimination of these raises the problem of truth, in a form, incidentally, entailing the problem of abstraction. For—

(1) We only discover *reliable* connections in a form that cuts them loose from the particular purposes of our primary interest. A distinction arises between pure and applied science. Pure science abstracts from purpose to get results which can be indifferently applied to any purpose. From the side of ethical theory the separation is reinforced. Value must be indefinable in terms of any matter of fact. That a thing is good is no reason for its being real or possible, and conversely.

(2) Natural knowledge is departmental. Beyond the fact that the connections are reliable, the things connected tend to be disposed in certain typical forms of existence—physical, chemical, vital. The recognition of these as distinguishable aspects of *all* fact makes possible the application to fact of the juristic conception of "natural law." Science is to be pursued as the search for uniformity, in various types. Only, the conception of natural law is adopted on the strict understanding that its content be rid of any purposive element.

B. But this extrusion of purpose from the content of consciousness has precisely the effect of representing it as a natural and restrictive condition of consciousness. The corollary of "pure science" is the assimilation to general vital energies of the activity in which it emerges. The true is what works, and to know *what* is thus true is *never* to be conscious of the purpose for which it is true. Knowledge is power, and to gain power we must select, on the lines generally characteristic of organic activity. For example, it is *known* that if a book be thrown from the window it will fall to the ground. A person who knew nothing of the properties we think characteristic of a book might know this. It is only a generalisation and we reach the position that what man knows is the portion of reality that is important for his survival. His world reduces to his environment in the biological sense. In trying to deal with other features of "reality" than the uniformities of which he avails himself, or with "reality as a whole," he would be exactly in the position of the fish out of water. Purpose, then, in the form of instincts and native tendencies—the naturalistic *a priori*—dictates from without the scope of knowledge and the form of human good.

Tracing the development of these tendencies we note first a strong dissatisfaction with the departmental character of the natural sciences. They must all be reduced to a uniform science of mechanics. Only so much of them as allows such reduction *is* science. A similar economising criticism comes to be passed upon the special forms in which mechanical principles are traditionally embodied—the "categories" of science. These, it is argued, are technological in their function, and of only hypothetical validity. They serve to "save the appearances" on which we act. But they do not constitute any real object of knowledge. The problem, then, is how to continue saving the appearances while eliminating the hypothetical or symbolic elements. Scientific progress is looked for in the approximation to an ideal of "pure experience," which is usually defined in terms of sensation. Everything mechanical is reducible to some form of the characteristic spatio-temporal relations of sensory elements.

But the scheme reveals an inner discrepancy. If you take seriously the technological view of scientific principles, why should you exempt the spatio-temporal relations into which you resolve them? What are they but a highly generalised technique? While, on the "pure experience" side, the form in which we are to have knowledge free of all foreign elements is one in which the original discrimination of the constant connections of things is superseded. The goal is not truth, but 'beyond truth and error.'

Turn now to the development of activism and the upshot is similar. Consciousness, from this standpoint, belongs simply to one of the orders of nature, that of "physical causation." For example, the stars, over and above the tractive force which they exert upon the earth, produce upon its surface an eruption of observatory buildings. Next, this, like other relations for "knowledge," falls to be exhibited as something whose existence consists in its being utilised in the maintenance of life. Psychologists abound in such phrases as "the human material," "social control," and the like. Professor Muscio's recommendation of the study of the history of philosophy as bringing to consciousness the principles with which the intelligence normally works unconsciously, and thus enabling us to control *them* (my italics), seems to be addressed to occupants of this standpoint. But in consciousness we do not control our principles; we respect them, or try to formulate principles that we can respect. When, however, the very principles on which we reason are taken as factors to be controlled, the thorough-going scepticism of the whole position emerges. The behaviourists are quite clear on this point.

When mind is taken for something to be used in virtue of its causal relations to other things, it cannot be a cognitive subject. Consciousness disappears from the reckoning. Nothing objective remains, for where there is nothing to reverence there is nothing to know. Where everything is a mere means we cannot have a *world*—a mechanical system of the universe is a contradiction in terms. Thus we must take a further step in "biologism" and deny that there is any reality from which selection can be made. All that exists is organic wants and their satisfaction.

But then, to revert to Professor Muscio's phrase—the "we" who are to do the controlling cannot be the intelligences whose working principles are to be brought to consciousness—*our consciousness*. "We" rather occupy the position of the political or ecclesiastical "boss" who learns by the study in question how to "turn on" "mechanism," "finalism," "idealism," "realism," etc., in the minds of his fellows as occasion requires. But this is to bring back consciousness in the old sense. In manipulating my environment, let it be through my knowledge of the minds of others, the means and ends fall together within the content of *my consciousness* at least. But then I am deferring to certain principles according to which my intelligence works, in which I recognise an objective element which I do not manipulate, and to which I incur intellectual and moral responsibility. So, however, are these principles open to the consciousness of other subjects, and introduce me to these others in a capacity quite other than utilitarian.

If such be admitted the consequences of prominent trends in modern thought and action, the present relevance of the attempt to find a solution in philosophy in the classical sense is established. From its standpoint, the difficulties are those arising for certain *theories* framed to express the character of various normal human pursuits. These theories together constitute a criticism of the philosophical tradition which may be entitled subjectivism. In seeking to expose and solve the difficulties of that position philosophy serves to promote confidence in the pursuit of the fundamental human interests—truth and freedom. Characteristic of its search are a *method* and a *hypothesis*.

1. The theories explicatory of the quest after natural fact and after self-expression are seen to be based upon generalisation. These pursuits are taken as particular isolated activities, and the theories are abstracts of their average character. But to explain how there should ever have come to be a

theory of these activities at all—which only *seems* the more pressing in the case of those not expressly labelled intellectual—*ad hoc* tendencies to “rationalism,” “instincts of curiosity,” and what not, have to be conjured up from the void. Philosophy, on the other hand, recognises that abstractive generalisation is no substantive method at all, but represents only the skeletal deposit of a fundamental process of *specification* within the content of a knowledge that is, however vaguely, self-conscious from the first. The pursuits in question, then, can never be understood or justified in isolation, but are to be defined and limited as the forms of expression of the one rational human spirit.

2. The hypothesis which justifies the method is that the element of purpose belongs to the content of consciousness. *The urge is in the object.* It is only the good that we can at any stage be said properly to *know*. Nothing but an embodiment or an exponent of the good is an object. In following out the bearing of ethical principles on modern subjectivist tendencies, assuming as they do a nature which is inert and a human nature active without responsibility, philosophy finds the type of knowledge itself precisely in the process and content of *responsible volition*. The rational good is just that concrete universal which, vaguely but imperatively apprehended at the outset, is particularised by action.

As the identical principle expressed in a variety of forms, the universal is at the same time the common object of different subjects. This is all that philosophers have ever meant by the phrase “a common good,” namely a knowable good. The mysticism with which the phrase has been charged is wholly on the part of the critics. Now the common recognition of the good, specifically realised through the volition attendant on that recognition, constitutes society. Philosophy, then, is co-extensive with political theory. It is the standpoint of philosophy that is assumed by the citizen as he exercises his inalienable function of pronouncing on the importance for policy of the facts provided by the scientist or expert technician—and thereby gives the final determination of the *truth* of these facts. The nearest analogue of philosophy is to be found in the deliberative and legislative functions of a democratic community.

Will is the principal of individuation. Thus the institutions in which the common good is pursued in the various degrees of its historic specification are individual. But it is necessary to add that individuality is everywhere to be achieved not by attending to it, but to the universal which

it exists to express. Sentimentally to isolate the individual from that process and make it an object of independent solicitude is straightway to impoverish it. History is the correlate of, but not a substitute for, philosophy.

It might be urged that, on our showing, philosophy implies the same fatalistic attitude that was earlier attributed to the technological spirit. If everything is an embodiment of, or means to, good, then to find how to do something new is *ipso facto* to be justified in doing it. But it is to be remembered that it is in conscious experience that the good is being specified, in whose content every particular is an *alternative*. The supreme type of knowledge is a disjunctive judgment, and the form of will is choice.

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#### NOTES BY THE WAY. No. 2. Creeds and The Creed.

It seems to me that however elaborate the organisation and ritual of a church may be, the only creed it needs is belief in God. This includes everything else; and it is for the churches to show by their example and teaching what the far-reaching meaning of belief in God is. My own objection to existing creeds is based on the presence in them of what to me seems partly materialism, partly the degradation of religion into a matter of individual self-interest, and partly the association of it with questionable, or more than questionable historical beliefs. To treat body and spirit, or God and the world, as things separable in space, like objects interpreted in accordance with physical working conceptions, seems to me to be a dangerous form of materialism. To appeal to men to care for their individual souls, instead of to realise their true existence in union with God, seems to me to be a negation of religion. To represent religion as depending on the historical accuracy of various statements, is to ignore altogether the evidence which each man carries within him of the presence of God. This is the only evidence which counts, and but for it religion could only be a mockery of what it is. In the last resort no mere human authority, whether in the form of Church, or State, or tradition, can come between us and God. For multitudes, and particularly of those who can least be spared from the proper work of the churches, existing creeds are a sentence of excommunication. For multitudes of others, these creeds are only an empty sound or else a justification for what is called atheism. But in the great struggle which ended five years ago, these same multitudes showed the faith that was in them by willingly risking all they had for their fellow-men. They did so without thought of personal reward or personal immortality. Their creed was short and often inarticulate, but it was graven in their deeds, and was surely the creed that is symbolised by the cross. Behind the visible churches there is an invisible Church of God, and this invisible Church includes every sincere follower of duty and seeker after truth. The visible churches will assuredly crumble into dust if they cease to represent the invisible Church.

J. S. HALDANE, in the *Hibbert Journal*.

# THE MEANING OF PHILOSOPHY (III.).

By

W. R. BOYCE GIBSON, M.A., D.Sc., Professor of  
Philosophy, University of Melbourne.

## I.

**T**HAT Philosophy is a fundamental function of Thought or Reason will, I think, be generally admitted. However closely it may be bound up with feeling, imagination or will, its essential connection is with the distinctively thinking processes of conceiving, judging and reasoning. The truth-seeker, as Parmenides tells us, must learn to set aside habit and custom, and judge by argument. And the judgment must be unfettered. The thought of Philosophy must be free to rebel even against its own origins, to accept truth itself as a convention, if the argument so require, and for very love of consistency to efface itself, if need be, in self-contradiction. Philosophy is Free Thought or it is nothing at all. It must be free to be reasonable in its own peculiar way, enjoy its own liberties, recognise its own obligations, and bear the full weight of whatever responsibilities its freedom may bring with it.

Free Thought is, of course, as essential to Science as it is to philosophy. Accepting Professor Muscio's division according to *method*, *content* and *motive*, we would compare Philosophy and Science somewhat as follows. Both these great ventures, we would suggest, are self-limited by certain assumptions or postulates of *method* through which the scope or manner of theoretical enquiry are determined, and the relevant types of explanation made clear. Thus the Inductive assumption that Nature conforms to law means that the science based upon it will decline all magical and spiritistic explanations as irrelevant, discount all references to ends and purposes unsupported by an analysis of the associated mechanisms, and concentrate on the interpretation of fact through law and of law through system. Opinions will differ as to the most general distinction between Science and Philosophy from the standpoint of Method. If we take Plato as our guide we shall be inclined to describe the distinctive method of Philosophy partly as synoptic, as seeing things together and as a whole, whereas Science is content with abstract sections and perspectives; and partly as regressive, as a critique of pre-suppositions which the Sciences take for granted. As regards its object matter or *content*, Science, I take it, is concerned to study some limited field of Order—the Order of Nature under

law, the Number series or the forms and laws of ideal Space-construction—and to show it moreover, if we may refer again to method, on objective and co-operative lines. Men of Science must be able to build on each others' results, and must therefore be able to standardise these in objective ways that will effectively eliminate any arbitrary element in the personal equation. The content of Philosophy, as I conceive it, is by contrast characteristically inclusive and ultimate. What the philosopher would investigate is not the Natural Order in its detail, nor the Ideal Orders of number and figure, but the Universe in its totality and its inwardness. Only a critical enquiry into the Nature and the limits of knowledge can give any ground for limiting the scope of Philosophy. This width of interest does not prevent Philosophy from having its own special problems. However philosophers may be divided in relation to the freewill issue and all its implications, the problem at any rate remains central for philosophical enquiry, and in close conjunction with the problem of Personality and Experience, constitutes a region of enquiry sacred to the philosopher. To invade it effectively Science would have to change its categories, shift its viewpoint, alter its methods, and in so doing it would simply turn into philosophy. Finally, from the standpoint of *motive*, I would suggest that whilst both Science and Philosophy share a common respect for rationality and are stimulated in their quest by a common reverence for truth, the meaning put upon these terms differs characteristically in the two cases. To the philosopher reality means ultimate reality, and rationality will to him have a corresponding wide scope of meaning, covering the rationality of fact as well as of theory, of imagination as well as of thought, of Art as well as of Science. And there will be similar extensions in regard to the meaning given to Truth.

## II.

The meaning of Philosophy is seen in a fresh light when, instead of contrasting it with Science, we contrast it with Art, Morality and Religion. Here the fundamental agreement between these great foci of human culture lies in their common rationality. In Art imagination takes precedence of analytic thinking, and the medium of presentation is no longer the concept, not even in poetry. No one would refer to a cathedral or a sonata or a poem as a conceptual structure, even though he were convinced that Beauty was as rational as Truth, and that the structures in question were pre-eminently rational. We recognise a rationality in expressive loveliness, and do not confuse it with the rationality of a problem or a

theorem. Similarly with the Moral Order and the Moral Life. The orderliness here is not set out in propositions but in deeds; in actions that seek conformity with an ideal of goodness or rule of right, revealing some inruling logic of sentiment and spiritual power that clashes with evil rather than with error, and builds up, not a system of ideas but a virtue, a character or a happy life. And we might figure Religion as the plenary source of rationality, and Art, Morality and Philosophy as so many differentiations of the religious reason. Philosophy, as representative of the Theoretical Reason, would then be distinguished from Religion as knowledge is from faith, from Art as the problem is from the masterpiece, and from Morality as true insight is from a good will. In some such form as this Philosophy as a function of the human soul, may be contrasted with the sister functions of Morality and Art, as the Reason whose function is Thought and whose quest is Truth.

### III.

And yet the meaning of Philosophy is misconstrued if it is treated as a mere matter of reasoned knowledge, of argument and grounds. Vision is as essential to Philosophy as Reasoning, and it is the function of the reasoning to make the vision intelligible. This is a fundamental requirement and brings Philosophy, on its own level, into line with Natural Science which cannot do without its sensory basis. The need is variously expressed through the use of such terms as Intuition, Immediacy, Experience, but the essential idea is always this,—that Philosophy's high function is to deepen our sense of reality by revealing in constantly new lights, its supersensible structure. Each philosopher has his own personal viewpoint and his own perspective. The perspectives overlap, and are variously continuous and supplementary. Moreover, philosophers frequently assure us that their main object is to lead their readers to the proper viewpoint from which they will be able to share with the author his vision of reality. Bergson has pressed this point and has also noted how the difficulties of a philosophic argument vanish as if by magic, once the thinker's viewpoint is won and his special perspective mastered. "Philosophy," says Alexander, in reply to some criticisms by C. D. Broad (Mind. N.S., 120, p. 422), "proceeds by description, it only uses argument in order to help you to see the facts, just as a botanist uses a microscope." "Mr. Broad," he adds, "has a passion for argument, naturally enough as he does it so well, but I dislike it even in Mr. Broad." Yet, even Mr. Alexander would wish us to see his

point clearly, to grasp his argument as a whole, to have an intellectual *view* of it. The truth seems to be, as Stout, Merz, Sorley and others have pointed out, that all apprehension is by its very nature *synoptic*. We grasp and hold our perspectives and topics, and sow our thought in the undivided, immediate and total impression they give us. *Synopsis* comes first, and it persists as the foundation of all subsequent reflective work. *Analysis* and *Synthesis* depend for their possibility on *Synopsis* which is therefore an *a priori* requirement of the scientific understanding.

The importance of seizing the viewpoint in philosophical discussion becomes very apparent when the familiar cleavage of misunderstanding arises between the determinist and the libertarian. Grasp the scientific viewpoint with its conviction that all possibilities are necessities in *disguise*, that Chance is the name which our ignorance gives to the Law it cannot see, that Law itself is uniform and inexorable in its working, and it will be hard to give any meaning to possibilities that are real, choices that are genuine, and obligations that are not necessities. But transfer the point of view to the sources of the personal life, grasp the Ideals as "the reality of God within us," and their obligations as an appeal and a challenge, think of open possibilities as the only intelligible object of will, and will as a functional expression of personality—think yourself into all this nexus of Idealistic beliefs, and freedom with its first causes and ambiguous futures will offer itself as the indispensable key to the proper understanding of life and the universe. I do not suggest that vision and viewpoint are here Philosophy's last word. A viewpoint may be defended by argument. There are many principles of an axiomatic type, e.g., the Laws of Intelligibility, the so-called "Laws of Thought" which cannot be proved by reference to other grounds without revolving in a vicious circle, but they can be abundantly justified as fundamental by the reasoned indication that the very doubt of them implies them, that to deny them is *eo ipso* to reinstate them, or that they cohere so firmly with some system of scientific thought that their untruth would break the bonds that hold the system together and stultify it utterly in whole and in part. If two units added to two other units do not make four units, what becomes of Arithmetic? By proofs such as these we can press beyond self-evidence, so liable to subjective abuse, and reinforce the obvious by showing that it cannot be obviated without intellectual disaster. Philosophy's last word rests with the Reason.

## IV.

Philosophy, ever since the days of Pythagoras, has been associated with Contemplation rather than with Action. The Pythagorean philosopher was essentially the "spectator," even when most mindful of his station and its duties. Aristotle bids us in pursuit of our highest happiness put off our mortality and absorb ourselves in the Thought of Thought. And Plotinus assures us that Contemplation is the crowning form of Action itself, seeing that it alone is creative. The Modern World has largely reversed this verdict, and given us Pragmatism, Utilitarianism and Salvation through Works. But the conflict between the theoretical and the practical functions of the Reason is as old as Philosophy itself, and we cannot pass it over when the question at issue is the meaning of Philosophy. Is it the major business of Philosophy to minister to human happiness, or is it its sterner mission to follow fixedly the truth? It may help us here to consider the very similar problem with which Science is faced. No one to-day can ignore the outstanding significance of such applied Sciences as Medicine and Engineering. Indeed, the human advantage looms here so largely that the thought is forced upon us that the very function of Science is to minister through its applications to the comfort and well-being of man. Are we then to take it that the chief end of Science is to better the conditions of human welfare, and that it is its characteristic function and privilege to be the handmaiden of all the utilities? Any such view of the function of Science in destroying its freedom would also destroy its utility. Science has proved most useful in the long run when it has been free to follow its own standards of self-development. To be fruitful it must work in one way only: the Scientific way. It may from time to time and with advantage, if it is already sufficiently developed, take its problems from the necessities of human life, as Pure Mathematics may with advantage take its problems from the perplexities of Physics, but in no case can its method of work be profitably determined by any necessity but its own. The needs of men may set many problems to Science; but they cannot prescribe its methods. The ends for which Pasteur worked were determined by the needs of his country and of mankind, but his methods were those of the most patient and rigorous analysis. It may be the glory of Science to help mankind forward on its way, but it can do this only if it has already reached its own foundations, fixed its own principles and methods, and constructed its own instruments and machinery. Science cannot usefully do odd jobs in the spirit

of jobbery. The will to know the truth is of the essence of Science, and is the pure source of its distinctive utilities.

Philosophy, too, has its own principles and methods, and the essential condition for its utility in practice is that these principles and methods should be well established and developed. For Philosophy as for Science, the first essential is that it shall be true to itself, faithful to its own rational standards. Starting from experience, Philosophy will be aware, *ab initio*, of the great problems which experience offers and be inspired by the sense of the vast importance for man of correct ideas concerning such issues as freedom and destiny, pleasure and duty, and the nature of truth and goodness. Some great conception of the meaning of things, a clear insight into the primacy and independence of the spiritual life may strike a philosopher with all the force of a religious conviction, but as a philosopher his work will be judged by the comprehensiveness and rigour of the thought through which that insight is explored and driven home. The times indeed may call for a combination of the philosopher with the religious prophet, moral reformer or imaginative artist; none the less his philosophy will be judged solely by the standards of the philosophic reason. What, then, is the philosophic reason? What is the true standard of philosophic rationality? And what do we mean by "true"? It is the business of Philosophy to answer these very questions. Perhaps a thought is true because it works, or maybe it works because it is true. Shall we say again that life is determined by conceptions, or shall we not rather hold that conceptions are determined by life? Shall we say that the primacy and independence belongs to the spiritual life, or maintain rather that it belongs to the reflective, impersonal reason? In particular it may well be true as Socrates and, in our own time, Eucken, have urged, that spiritual self-renewal is an essential condition of true insight in Philosophy and that if we do not dream the myth in which the ideal glory is revealed to us as the most real of all realities, shall we have the requisite basis in experience for conceiving and maturing a theory of Ideas or a Theory of Ultimate Values? Philosophy may not be, and surely is not Religion, but the religious motive may be essential to the philosopher for the proper understanding of his own problems which are those of the Universe itself. None the less, whatever the stimulus which Philosophy may receive from man's need for God, Beauty, Justice and Happiness, however necessary this stimulus may be for yielding depth of insight and range of outlook, and however great the accessory value to a philosophic masterpiece of religious depth, moral fervour and expressive

style, this dominating fact remains surely unchallenged: Philosophy is a reasoned study of experience, and the essential charter of its freedom is the right to be reasonable in its own distinctive way. In last resort it will be judged by this, its own proper standard, its standard of reasoned truth.

Professor W. Anderson has proposed defining Philosophy as the Theory of Practice. It is true that all philosophic Systems have their theories of practice, and if the term is used in a sense sufficiently wide to cover production as well as action, creative freedom as well as orderly efficiency, it would be a tempting conception to rally round. And we cannot forget that the most fruitful School of Theory that ever existed, the Pythagorean, treated Philosophy as the sovereign method for purifying the soul and preparing it for its immortal destiny. Moreover, a Theory of Practice would cover well not only the Pragmatism of James, but the Activism of Eucken, and would fit in well with the primacy accorded by Kant to the Practical Reason. But it would fall short of Bergson's Intuitionism, and it would certainly shackle the splendid sweep of Hegel's Absolutism. I would more willingly connect Philosophy directly with the Quest after Truth as Hegel himself does. "Truth is a noble word, and the thing is nobler still. So long as man is sound at heart and in spirit, the search for truth must awake all the enthusiasm of his nature." (Logic, tr. Wallace, p. 31.)

The view of Philosophy as a Quest or an Aspiration has its own dangers, no doubt, and the realist movement of the last decade or two has done much to warn Idealism of the dangers which lurk in an over-developed subjectivism. But there are other objectivities than those which face us when we look towards an external world. There is, in particular, that inward objectivity which is the secret of the subjective inlook, the world within the mind, that cosmic extension apart from which personality is but the wraith of its true self. It is towards this spiritual world and its supersensible foundations that our aspiration looks. If it is true "practice" to set up this Spiritual Order in our midst, then Philosophy may well be, in its most intimate meaning and ultimate bearing, the "Theory of Practice." But if, when emphasising Practice we would put away as a distracting luxury that creative Contemplation which is the source of so many great things in Art and Life, and, in our anxiety for efficiency and the best results become impatient of Aspiration and the best motive, we are, I should venture to say, sacrificing life's centre to its periphery, and this certainly is not what Professor Anderson would wish.

His view that the demands of Practice are so searching that knowledge cannot organise itself too profoundly or too systematically in order to meet them, suggest so close a kinship between Practice and Thought, and makes Practice so expressive of the Ideal, that the Theory of Practice becomes ultimately indistinguishable from a Theory of Aspirations and Ideal Values.

Professor Muscio has warned us in his lucid way that a definition of "the philosophy I hold to be true" should not be confused with the definition of "philosophy in general." My only fear is lest conformity with the warning may not give too abstract a view of Philosophy. Should we not, following Hegel once again, endorse his contention that the best definition of Philosophy is that which the History of Philosophy gives through its own self-criticism? In this case all the philosophies held to be true, each in its own place and connection contribute vitally to the systematic conception of Philosophy in General. If, in our anxiety not to be personal we cut down the distinctive inspirations of A, B, and C, we may leave standing no more than the common bole and root, with all the growing points sacrificed, and with them, the instructive differences in viewpoint. It is, of course, arrogant to picture forth one's own philosophy and then label it *Philosophy simpliciter*, but might we not perhaps agree in recognising that the true meaning of Philosophy must be sought in the spiritual bond which unites in one inclusive organisation all the sincere and enlightened endeavours of the human spirit to express in terms of Thought its love of the Ideal and its sense of Reality?



# THE EMERGENCE OF RELATIVITY IN A. N. WHITEHEAD'S PHILOSOPHY.

By

E. V. MILLER, Auckland, New Zealand.\*

**I**T is the intention of scientific workers to base the system of knowledge which they are engaged in building up on the solid ground of Nature, on experience, on accurate observation, and to eschew the unsafe methods of metaphysics. It is the belief, too, of many, perhaps of the majority, of these workers that in the development of scientific knowledge this condition is scrupulously observed. On the other hand, from mathematicians, from philosophers, and from the more philosophic minded of the scientific workers themselves, there come drastic criticisms of the structure of scientific knowledge, attacking the fundamental assumptions on which that structure is reared.

Especially is this the case with regard to the notions of space and time which have held unquestioned sway from time immemorial until the beginning of this century. I refer to the concepts of space and time as entirely independent of each other; independent also of Nature, which was conceived of as something taking place in space and in time, in such a manner that if Nature disappeared time and space could still be thought of as existing.

During the past thirty or forty years the progress of science itself has revealed flaws in the foundations of our knowledge. The theory of relativity, the most notable advance in scientific thought since Newton's day, might be described as the result of a resolute facing of these flaws; as a determined application of the observational criterion of science to conceptions which had been masquerading as facts of experience. Even before the day of relativity the relational theory of space was an admission that we cannot know space without matter or matter without space; but such interdependence was not extended to *time* and matter, or time and space. Relativity made the further admission that time, so far from being independent of Nature, is as much an essential part of it as space, and cannot rightly be thought of without it.

One of the most notable of the modern critics of the groundwork of science is the eminent mathematician and philosopher, A. N. Whitehead, Professor of Applied Mathematics in the Imperial College of Science and Technology.

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In two important works, entitled "An Enquiry Concerning the Principles of Natural Knowledge" and "The Concept of Nature," Professor Whitehead has put forward a new system of natural philosophy. These works are by no means easy reading, and for that reason it is unlikely that they will quickly become known to scientific workers. Yet the philosophy they contain is, at least in the writer's opinion, of outstanding importance to those students of science who are not content to take without examination the assumptions and concepts inherited from the remote past, as sufficient basis on which to develop the vast and growing system of knowledge which constitutes modern science.

Whitehead's philosophy is an attempt to push the principle of observation and inference *all the way*; to discard every preconception and start with pure observation. The foundations of his system are always experiences, never thoughts. One might perhaps think that if science has indeed chosen false foundations to build upon, its system of knowledge must be vitiated throughout; and that, therefore, anyone setting out to elaborate a system of knowledge based on entirely new premisses would be attempting the herculean task of producing a complete new system of knowledge differing largely from that with which we are familiar. Now a system of knowledge such as we possess, which has taken centuries to elaborate and the labours of myriads of men of outstanding intelligence to achieve, and which, moreover, has passed the drastic test of practical application, is not one to be condemned off-hand on the ground of apparent inconsistency. To do this would be to fall into error, and this Whitehead avoids. Logicians know more than one way in which valid conclusions may be derived from false premisses.

It is clear that Whitehead takes the results of modern science as a more or less close approximation to the truth about Nature. One of his aims is to show that these results do not imply the validity of our preconceived notions of Space Time and Nature; and another is to show how, starting from elementary ideas and concepts based on what we really experience—and not on what we merely think—such concepts form a logical substratum to the existing system of scientific knowledge.

The subject matter of his investigation is Nature; a closed system not involving thought or emotion. Nature is that which is disclosed to us through the senses by the process of what Whitehead calls "sense-awareness," a process not involving the intellect. Sights, sounds, feelings of touch, etc., are the deliverances of sense-awareness. Thought is not involved in such bare experiences, but only in their arrangement in a

rational system. Such disclosure is pure observation, and what is disclosed is presented to the intellect as the raw material for thought to work upon in the elaboration of a system of knowledge of Nature. The deliverances of sense-awareness are never precise. Precision is essentially an intellectual requirement and an intellectual achievement. We are never aware of a geometrical point or line, or of an instant of time, or of ideally uniform motion. That is to say, none of these things are met with in Nature. But we are aware of closer and closer approximations to these things, and the mind is able to carry on the process of approximation to the limit of ideal definition.

It is in the consideration of what is disclosed to us by sense-awareness that Whitehead makes one of his main criticisms of the foundations of science; and that is in connection with the concept of matter. The error in this, he says, is a legacy from Greek philosophy, the influence of which "has issued in one long misconception of the metaphysical status of natural entities." He proceeds to explain that the concept of matter as a simple substance in terms of which the course of events could be expressed, has had the unfortunate result that the concept has been distinguished from those sense-perceptions of shape, position, hardness and so on, which alone constitute the relevant observational data, and promoted to be a substratum or cause of these perceptions, while the things really observed, the experienced shape, hardness, etc., have been degraded into mere attributes of the concept. Really the hardness, etc., is the way, and the only way, we have of being aware of a fact of Nature; it is the deliverance of sense-awareness; while the concept formed in the mind, to which we attach the word "matter," is what the intellect abstracts from this same deliverance. It is the intellect's way—or one of many possible ways—of apprehending the same identical fact. Thus in the current philosophy of science, "what is a mere procedure of the mind in the translation of sense-awareness into discursive knowledge has been transmuted into a fundamental character of Nature." Whitehead goes on to show that the concept of matter as the substratum of our experiences presupposes the independent existence of time and space as that in which Nature exists;—necessary, indeed, to Nature, as is the screen to the moving picture thrown upon it, but as independent of it as the screen is independent of the picture.

The view in which we think of our experiences as existing in time and space, and as being the attributes of an underlying substance also existing in time and space, Whitehead characterises as a muddle. "The whole being of substance

is as a substratum for attributes." Its relation to attributes is that of reality to appearance. If, then, we say that our experiences are in space and time, matter cannot also be in space and time; or at least not in the same space and time.

The intrusion of this idea of reality and appearance into the philosophy of natural science involves a further confusion. The hypothesis referred to is that there is a real nature consisting of atoms, electrons, etc., which, by interaction with the mind, gives rise to the deliverances of our sense-awareness—warmth, colour, hardness, etc. Whitehead contends vehemently against this dragging in of irrelevant material. The subject of the relation between mind and Nature—the "why" of sense-awareness—belongs to metaphysics. Why should not the red glow of the sunset be as much part of Nature as are the electrons and electric waves by which men of science seek to explain the phenomenon? It is only by the experience of the red glow that we become aware of the phenomenon at all. It seems strange to accord this a lower degree of reality or primacy than that which we attribute to the concepts—electrons, electric waves—arrived at by a process of inference, based on the experience.

Taking Nature, then, as what is posited for us in sense-awareness, our description of its most general character is complete when we say that it consists of events and their relations. We might be inclined to think that it is necessary at least to add objects, more or less permanent, to which events happen. But the permanence of any object, even one such as the Great Pyramid, implies no more than the restriction of the observer's span of observation. We can easily find processes in Nature, for example the life-history of a star, beside which such an object takes its place simply as the character of a limited event.

But what are the relations of events? The standpoint of observation again reveals that they are completely generalised in terms of what Whitehead calls "extending over" or "extension." Events may overlap, or one may contain another, or they may be entirely separate. These modes of extension give a structure of events fully expressible in terms of the relations between the elements of a four-dimensional manifold. We are not to think of this as simply a combination of the time, with the space of science with its three dimensions. In the proper order of consideration, these scientific concepts are specifications of the fundamental relation of extension, arising through particular conditions.

Thus it becomes part of the problem to indicate how the manifold has actually come to be specified in this particular way in human thinking. The answer is that the concepts

space and time arise from the felt relations between events immediately before our notice and the events of the rest of Nature. There is something in Nature beyond what we are observing, and we think of this "beyond" relation in two senses. These are the primary basis of the spatial and the temporal relations of events respectively. Further, in developing our space and time concepts we are making use, along with the fundamental relation of extension, of the observational relation of simultaneity. Simultaneous events are those given in one act of sense-awareness. (Of course, simultaneity must not be confounded with instantaneousness, which is a thought-product not able to be given in sense-awareness.)

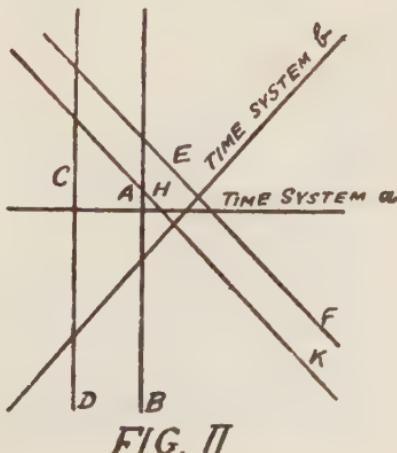
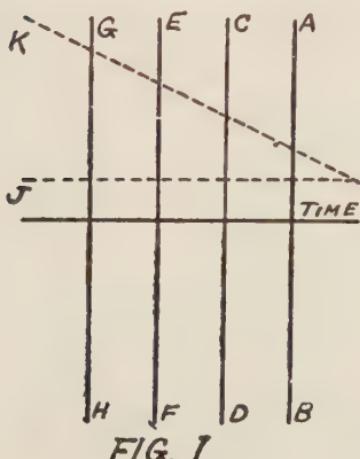
We can now proceed to the determination of the elements of the manifold, of which our concepts of space and time have been seen to be properties. These may be reached in two ways—

I. Directly from extension. In any act of sense-awareness there will be an event or events discriminated over against the remainder of Nature present for discernment. Together these form a "duration," which is accordingly not a mere lapse of time but a concrete slab of Nature of finite temporal thickness, limited by simultaneity. Consider, then, a series of durations of diminishing temporal thickness, each extending over the one below it in the series. Such a series is called an "abstractive set." At the limit we get an artificially simplified Nature, Nature at an instant. Whitehead names this procedure the Method of Extensive Abstraction. By this method it is that we get from crude sense-awareness to precise intellectual concepts; other examples being the geometrical from the visible point, from perceptual uniform motion the precise concept required for the statement of the laws of motion, ideal from observational simultaneity. Thus a "moment" of time is this "Nature at an instant," or the character at an instant of the event which is the life of Nature. The procedure is that by defining certain conditions governing the constituent elements of abstractive sets of events, moments inside and outside a duration, and also the boundary moments of a duration, can be defined, leading to the definition of temporal order.

II. (a) We may also reach the elements of the manifold by what Whitehead calls the "intersection" of moments. Now that we see space and time as concepts to which we work down from extension, having moreover to come by way of "beyondness" and observational simultaneity, the space and time which emerge, while absolute and independent for each observer, are not necessarily so as between different observers

in different circumstances. Thus they will differ from the space and time of the usual scientific point of view.

(b) Now the relations that hold between different time-systems of different observers exemplify what is meant by the intersection of moments. Its character is to be approached by contrasting it with "parallelism" of moments. A moment, being the state of Nature at an instant, at another instant Nature may be in a completely different state. In this case the moments are completely separated; they are said to be parallel, since parallel lines in the Euclidean sense have no part in common. Whitehead illustrates some of the properties of durations and moments by means of a diagram. He says, "The slab of Nature forming a duration is limited in its temporal dimension and unlimited in its spatial dimensions. Thus it represents a finite time and an infinite space. For example, let the horizontal line (Fig. 1) represent the time; and assume Nature to be spatially one-dimensional, so that an unlimited vertical line in the diagram represents space at an instant. Then the area between the unlimited parallel lines AB and HG represents a duration. Also the area between CD and EF represents another duration, which is extended over by the duration bounded by AB and HG. But in this figure we have assumed only one time system, which is the Newtonian hypothesis. Suppose there are many time systems, and consider two such systems *a* and *b*. These are represented by two lines inclined to each other. (Fig. 2.) A duration of time system *a* is represented by the area between AB and CD, and a duration of time system *b* is represented by the area between EF and HK. Two such durations necessarily intersect and also can neither completely extend over the other."



(c) When two moments intersect, the portion of Nature common to them both will be a plane; for we must remember that each moment has three dimensions in a four-dimensional manifold. This ideal plane in the space of a moment, Whitehead calls a "level." Certain intersections of three moments will give two intersecting levels whose common portion is a straight line called a "rect." Certain intersections of four moments will give a rect intersecting a level in a point, called a "punct." No further entity can be obtained by the intersections of moments.

(d) We may approximate in sense-awareness to these elements of instantaneous space, as when we take a momentary glimpse of our surroundings. Thus anything that would, in the ordinary or "timeless" space of science, approximate to a line, such as we can continue to observe over a period, for example a road, is, in the four-dimensional manifold, a plane, similarly approximate. But since its "second" dimension is temporal it is not a "level," which is contained in a single moment. Whitehead names such a plane a "matrix."

But now comparing the two procedures, we find that "puncts," as determined by intersection, are identical with the elements finally reached by the method first considered. Taking, as a case of direct extensive abstraction, anything "going on," like a train in motion, by converging temporarily we get a less and less complex progress of Nature in the whole train, and converging in turn spatially we get Nature at an instant at some point, say, in the boiler of the engine. This event of minimum complexity, then, this "event-particle," differs from a punct in that the process of reaching the former emphasises the character (density and the like) of Nature at a point-instant, whereas the punct gives the position of the same element in the space of the moment.

An event-particle is as much an instant of time as it is a point of space. Thus in the structure of the manifold "space is not finally discriminated from time, and the possibility remains open for diverse modes of discrimination according to diverse circumstances of observers." The door is thus left open for the characteristic doctrine of relativity, the interdependence and commensurateness of space and time, if the properties of events call for such a theory.

Consider the parallel moments of a given time system: an event-particle in a given moment, A, occupies a certain position in the space of that moment. It is followed by event-particles in the succeeding moment, B, one of which is in the "same" position in the space of moment B as the first event-particle was in the space of moment A. It is a serious defect

in the philosophy of science that the need for defining, by reference to observational data, what is meant by the "same" position in successive moments has been overlooked. From the facts that "position" in the space of any duration is given in sense-awareness, and that durations of the same time system may overlap, Whitehead is able to define the meaning of the "same position" in successive moments of a time system.

A string of event-particles, one to each moment, occupying the same position in successive moments, Whitehead calls a "point-track." It is fairly obvious that, since a point-track has no spatial dimension, and occupies the same position in successive moments, it may be represented graphically by a straight line parallel to the time axis—such as the dotted line J in Fig. 1.

The geometry of the four-dimensional manifold obviously cannot be identical with the geometry of space and time as these are conceived of in ordinary life and in scientific thought. For Whitehead's philosophy to serve as a foundation to science, then, he must find the relations of such things as puncts, rects, point-tracks, which belong to the four-dimensional manifold, to the points, straight lines, etc., of the space of science, together with the time of science. He calls the space of science "timeless space," since it is conceived of as altogether independent of time. It must not be confused with the instantaneous space we have been considering, in which, for one thing, no motion is possible. The connection between the four-dimensional system and the scientific system is that, if scientific space be thought of as instantaneous, then its points, lines, etc., become identical with the puncts, rects, etc., of Whitehead's instantaneous space, so far as their geometrical properties are concerned. Further, including time in both systems, a point-track is seen to correspond to a point at rest in timeless space, and a matrix to a straight line.

For example: an observer is standing in a road looking at a stone lying on it. He is said to be looking, approximately, at a point on the road. But actually he cannot experience the stone without also experiencing lapse of time in connection with it. That is to say, he is experiencing an event which, in its geometrical character, is approximately a point-track. A point-track, then, in the four-dimensional manifold means, for a given observer, a point at rest in his timeless space.

The geometry of the four-dimensional manifold, which Whitehead proceeds to elaborate, will thus serve as a founda-

tion in observation (i.e., through extensive abstraction from events) for some geometry of timeless space.

What is meant by the diversity of time systems may now be better illustrated. An observer from his standpoint, considered as "at rest," divides up Nature in a certain way. He stratifies Nature with a time system we may call *a*. The successive durations in *a* do not intersect, nor do the successive moments. A point at rest in the timeless space of the time system *a* will be a point-track of that time system in the four-dimensional manifold. The dotted line *J* in Fig. 1 may represent such a point-track. An object at rest in the timeless space of *a* will be at the succession of event particles on such a point-track. It will occupy the same position in each moment. But an object in motion in the timeless space of *a* will occupy a different position in the spaces of successive moments; it will occupy a non-parallel line of event-particles such as *K* (Fig. 1). Such a line will not be a point-track in time system *a*. But it will obviously be a point-track in the time system of another observer who is moving with the object. The second observer will therefore impose a different time system, *b* on Nature, wherein the time axis is inclined to that of system *a*. Hence the intersection of durations and of moments.

I will not trouble you with Whitehead's developments from observational data and certain axioms, of the definition of normality and of the congruence relations of recta and levels in the same moment, or in different moments, either belonging to the same or to different time systems. More relevant to the subject of this paper is the development of the congruence relations as applied to lapses of time on point-tracks which are not parallel. This is achieved by a method which depends upon the axiom that relative velocity is equal and opposite.

Whitehead constructs a reference frame in time system *a* by choosing a time axis and three space axes, all four being mutually normal. Then the co-ordinates of an event-particle will be  $x_a$ ,  $y_a$ ,  $z_a$ ,  $t_a$ . The same event-particle will have, in the time system *b*, the co-ordinates  $x_b$ ,  $y_b$ ,  $z_b$ ,  $t_b$ . The two frames of reference can be arranged for simplicity, so that the origin and two of the axes coincide. Formulae for the transformation of the *a*-co-ordinates of an event-particle to its *b*-co-ordinates are then easily found. These contain a number of constants depending on the two systems *a* and *b* and on choice of time units in *a* and *b*. Relations between these constants are, however, found; also expressions for the

transformation of the components of a velocity in system *a* to the components of the same velocity in system *b*, which contain only two of the above constants. Of these two, one is found to be expressible in terms of the other and of the velocity of system *b* in system *a*; that is, of the velocity in system *a* of a point at rest in system *b*. By consideration of the same velocity in a third time system *c*, the remaining constant is found to be expressible in terms of the relative velocity of the systems *a* and *b* and a certain constant which is invariant for all time systems. The expressions embodying this result are of the form

$$\frac{v_{ab}^2}{1-Q_{ab}^2} = \frac{v_{gd}^2}{1-Q_{gd}^2} = k$$

where  $V_{ab}$  means the velocity of system *b* in system *a*, and  $Q_{ab}$  is a constant for all transformations in that pair of systems; similarly  $V_{gd}$  is the velocity system *d* in system *g*, and  $Q_{gd}$  is a constant for all transformations in that pair of systems.

Whitehead now proceeds to consider what sort of kinematic results would accrue from attributing various values to this universal constant  $k$ , namely the values zero, positive, negative and infinite. The first—zero value—leads to results obviously contrary to experience. In the second case  $k$  is given a positive value. It is to be noted that, according to the above equations,  $k$  evidently has the dimensions of the square of a velocity. Call this velocity  $c$ , putting  $c^2$  for  $k$ . Then we get

$$Q_{ab} = \left( 1 - \frac{v_{ab}^2}{c^2} \right)^{-\frac{1}{2}}$$

the well-known factor of relativity, if  $c$  is identified with the velocity of light. Putting the various constants of the previously-found transformation equations for an event-particle into terms of  $Q_{ab}$ , and substituting the above value of the latter, Whitehead reaches the characteristic transformation equations of the special theory of relativity.

We have still to examine two other cases. Putting  $k$  negative, say— $-h^2$ , the resulting type of kinematics shows no distinction between time and space, "so that it would be natural to suppose that every rect was a point-track and every point-track a rect, . . . This does not appear to correspond to the properties of the external world of events as we know it."

If  $k$  is put = infinity, then  $Q_{ab}$  = unity. This value leads to the transformation formulae for the ordinary New-

tonian relativity which, since early in this century, has gradually been losing acceptance in the scientific world in favour of the Einstein formulae.

Clearly the decision as to the value to be assigned to  $k$  must be settled by appeal to experience less general than the broad observational basis on which Whitehead's philosophy is founded. This constant is not necessarily the square of the velocity of light. But the velocity indicated must be extremely great, since all our experiences of Nature, save a few in which our observational equipment is peculiarly delicate, are satisfied, within the limits of experimental error, by taking  $k = \infty$ . Whether  $Vk$  has the precise value of the velocity of light or not does not appear from Whitehead's philosophy, for optical experiments, either hypothetical or actual, and the phenomena of electro-magnetism, have had nothing to do with its emergence. It appears as one result of the most general of all the phenomena of Nature, namely, the relation of extension between events, and certain axioms connected with the investigation of the congruence relations of events. Thereby is removed from relativity what is regarded by some minds as a defect in its presentation, and possibly in its claim to truth; I refer to the commanding part which optical experiments—actual and ideal—take in the exposition of a theory whose effect is to revolutionise the whole of physics.

With regard to the theory of relativity, what Whitehead's philosophy does, then, is to demolish, by appeal to reasoning based on universal experience, the presupposition—so firmly established as to have attained the status of a necessary truth—that for all observers there is only one space and one time, which are independent and incommensurable. This he does by showing that mankind's experience of Nature, even apart from those special experiments on which the truth of Einstein's theory rests, lends no greater support to such a presupposition than it does to a host of theories of relativity distinguished by various finite positive values of the constant  $k$ .

Light is shed, too, on the meaning of this special velocity,  $Vk$ , which is the same for all observers. The four-dimensional manifold needs only a single unit of interval to serve its congruence relations; but if we insist on providing two, one for all space systems and one for all time systems, the relation between these will necessarily have the dimensions of a velocity. That it is a very high velocity is the result of special magnitudes of the units we have found convenient in daily life and in science.

Thus does Whitehead arrive at the transformation equations of the special theory of relativity; and this stage marks the limit of the scope of this paper. But it is only right to mention that further development of his thesis leads Whitehead to a law of gravitation, in his formulation of which he draws, with due acknowledgment on the general method of procedure which constitutes Einstein's great discovery. Nevertheless his approach to the subject is quite different from that of Einstein; and the final formulæ of the two systems differ slightly, though they agree in those instances where Einstein's results have been verified. A remarkable characteristic of Whitehead's theory is that though, as we have seen, geometry of four dimensions is required, this geometry is throughout of the Euclidean type; he does not require his readers to form a conception of what the curvature of the space-time manifold may mean.

The aim of this paper has not been to send my audience away with a satisfactory knowledge of Whitehead's philosophy. Nothing nearly so ambitious. Its object will have been attained if the curiosity of a few has been aroused sufficiently to induce them to study Whitehead's exposition at first hand.

I desire to express my thanks to Professor W. Anderson, Professor of Philosophy in the Auckland University College, for reading this paper when in course of preparation, and contributing valuable criticism and suggestions.

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**NOTES BY THE WAY. No. 3. The Education of the Community.**

The realisation by a society of an educational ideal is a matter which goes beyond the schools. No society can devolve this work altogether upon its schools. Every society must also shoulder the burden itself. The houses in which men live; the public buildings by which they are surrounded; the amusements with which they are provided—all these affect education, and are part of education. Ugly and crowded homes, mean or flamboyant public buildings; places and modes of amusement provided by dealers ready to make profits by playing on men's meaner tastes—all these are teachers, and bad teachers. It is a lesson of Plato, and a very true lesson, that youth should "dwell in a land of health, amid fair sights and sounds, and receive the good in everything; and beauty, the effluence of fair works, should flow into the eye and ear, like a health-giving breeze from a purer region, and insensibly draw the soul into likeness and sympathy." It is not a fantastic folly of the artist to demand beautiful buildings for the eye to feed upon: it is not an aesthetic pose to claim that the State should support good music and good plays. These things are teachers of us all. They are part of the social influence "which flows into the eye and ear." The teaching should be clean: the influence should be pure. If cleanliness is next to godliness, taste is a still nearer neighbour of conduct. We are taking out an insurance for right conduct as well as for good taste when we set beauty in our public places.

ERNEST BARKER in the *Hibbert Journal*.

# ON THE NATURE OF MATHEMATICAL THINKING.

By

NORBERT WIENER, Ph.D., Massachusetts Institute of  
Technology, U.S.A.

If you divide the various sciences and learned disciplines in accordance with their subject matter, you will find the first and deepest line of cleavage between mathematics on the one side and the whole remaining body of human knowledge on the other. In what concerns its proved results, mathematics stands alone in its qualities of rigour, logical concatenation, precision, and conclusiveness. When to these marks of the subject matter of mathematics is conjoined the marvellous perfection of form possessed by that most familiar of all mathematical sciences, the geometry of the Greeks, it is entirely natural that the technique involved in obtaining such results and the mental processes of the mathematician should seem to the layman awful and mysterious. The latter attributes to the order of invention the characteristics of the order of presentation, and assigns to the nascent thoughts of the investigator something of the logical accuracy and sequence which appear in his published memoirs.

Now, there is perhaps no place where the order of being and the order of thinking need to be differentiated with such care as in mathematics. It needs but little reflection to see that any account of mathematics which makes logic not only the norm of the validity of its processes but also its chief heuristic tool is absurd on the face of it. The theory of the syllogism will tell you that when you have the propositions, "All A is B," and, "All B is C," you can derive the further proposition, "All A is C," but you will not find among all the works of Aristotle and Bertrand Russell combined, with the Schoolmen thrown in for good measure, one iota of information the worse off. So long as he keeps his published writings which will, without any further act of thought on your part, tell you when to use the syllogistic method, or what particular propositions to employ as major and minor premises. Logic will never answer a question for you until you have put it a definite question. Even then it will never volunteer any information. It has but two words in its language, and those are "yes" and "no." Logic is a critic, not a creator, even as regards its own laws of criticism. While a man endowed with logic alone would assuredly never do any bad mathe-

matics, he would just as assuredly never do any good mathematics.

Mathematics is every bit as much an imaginative art as a logical science. As has just been said, if you wish to know the answer to a question, you must first ask it, and the art of mathematics is the art of asking the right questions. From any set of postulates or premises or assumptions there may be derived an infinite set of lemmata and theorems and conclusions, every one as sound in its logical deduction as any other. Some of these will be recognised by any mathematician as of transcendent importance, more will constitute the ordinary stock in trade of the mathematical journals, but by far the greatest part will be by common acceptance nugatory and trivial. This charge is entirely beyond the jurisdiction of logic, but the ability to discriminate between such trivial theorems and the really vital conclusions of a mathematical science is precisely that quality which the competent mathematician has and the incompetent mathematician lacks.

What is an important theorem? Some theorems are important because of their direct physical and technical applications, others because of their position in the development of a further theory which is of interest, and yet others because of the beauty, symmetry, and richness of the theory of which they form a part. These latter qualities are of a nature essentially aesthetic, and are of course bound up with individual and personal judgment after the fashion of all aesthetic qualities. In the general recognition of varying degrees of beauty and importance, together with the lack of any permanent and universally accepted norm of these characters, in the existence of fashions, of local and national standards and of individual eccentricity, mathematical taste shows its essential kinship with taste in the arts.

In order to do good mathematical work, then, and in fact to do *any* mathematical work, it is not enough to grind out mechanically the conclusions to be derived from a given set of axioms, as by some super-Babbage computing machine. We must select. The postulates with which we start contain our conclusions only in the sense in which the keyboard of the pianoforte contains a sonata, in the sense in which a yard of canvas and tubes of paint contain a painting, or a block of marble a statue.

The imagination is the mainspring of mathematical work, while logic is its balance-wheel. As in a watch, it is not until the mainspring has been wound up to a certain extent that the balance-wheel starts to move. It is not until after we have

put ourselves a mathematical question, and have propounded at least a tentative answer to this question that there is any possibility of logical reasoning. Our tentative answer may be vague to begin with—very vague, and of a nature totally repugnant to logical thinking, for it may not even be in a form determinate enough to put down in black and white on paper. There is nothing more surprising than the power of the mind to formulate these vague yet useful hypotheses concerning a subject matter abstract and logical in character. What is it, I wonder, that forms the real content of our consciousness at one of the moments of reflective reverie which constitute so large a part of our periods of research? What we have can scarcely be a dim and confused image of the theorem at the end of our investigation, for the dim light of intuition may be a will-of-the-wisp, and our investigation may end frustrate. Those psychologies of meaning which see the psychological counterpart of the binomial theorem in an obscure strain at the back of the eyeballs are surely not very helpful in their analysis of the mental state of the mathematician.

This mathematical day-dreaming (in the midst of a difficult research, not a little of it is ordinary dreaming by night) is perhaps easiest to understand in the case of geometry, where it is largely dependent on a carefully cultivated power of spatial imagination. Even here it is remarkable how a crude two or three-dimensional image can do service as the vehicle of a notion in four or five dimensions, or even in space of infinite dimensionality. In the highly rarefied regions of modern analysis, however, such aid as the spatial imagination can furnish, though it is of undeniable value, is fitful and occasional. No picture of an everywhere dense denumerable set of points, or of a continuous curve lacking a tangent at every point, is in the least adequate to the complexity of the situation which it represents. Throughout function theory, postulate theory, and the theory of assemblages, the whole mass of habits of thought which makes possible any imagination whatever is as much a new acquisition of the human mind as the body and organs of the butterfly are new acquisitions of the caterpillar.

Habits of thought—it is these rather than the sensory and imaginative content of the mind which constitute what is vital in mathematical imagining. Inasmuch as the mathematical imagination must sooner or later submit to the criticism of logic, it is essential that these habits should accord with logic. First and foremost among these habits is the habit that the mathematician should continually subject his ideas to trial

by logic. He must incessantly try to draw the consequences inherent in his notions, and must instantly recognise when he is proving too much, and is drawing a conclusion which is manifestly false. He must arrange the steps of his proposed theory in a tentative logical order, narrowing the unproved gaps until his results cohere from beginning to end. He must revolve his system in his mind, trying it by all the examples his ingenuity can muster. When he finds a flaw, he must consider whether it is inherent in the very nature of his ideas, or merely adventitious and to be circumvented by a more ingenious approach. Whatever he builds up he must try to tear down, and whatever he tears down he must strive to build up again.

Not only must the mathematician employ his imagination in the invention of new problems and the discovery of *experimenta crucis* to test his answers to these problems, but he must ever be on the alert to see the widest consequences of the methods which lead to his conclusions. Many a theory is encumbered by restrictions which are either altogether unnecessary or are easily replaced by others of a more fundamental character. Many a research answers half a problem when it might just as readily answer the whole. In every branch of mathematics there is one plane of generality on which the theorems are easiest to prove, and needless complication arises as quickly by falling short of this as by exceeding it. It is a mark of the great mathematician to have taken a number of separate theories, fragmentary, intricate and tortuous, and by a profound perception of the true bearing and weight of their methods to have welded them into a single whole, clear, luminous, and simple.

Mathematics is an experimental science. The formulation and testing of hypotheses play in mathematics a part not other than in chemistry, physics, astronomy, or botany. Just as in the science of nature, old ways of regarding things are compared, tried against the facts, worn down by mutual attrition, until they take on a new and unfamiliar aspect. It matters little in what concerns scientific method and the mental processes of the investigator that the mathematician experiments with pencil and paper while the chemist uses test-tube and retort, or the biologist stains and the microscope. An experiment is the confronting of preconceived notions with hard facts, and the notions of the scientist are just as much the result of preconception, the facts just as hard, in mathematics as anywhere else. The only great point of divergence between mathematics and the other sciences lies in the far

greater permanence of mathematical knowledge, in the circumstance that experience only whispers "yes" or "no" in reply to our questions, while logic shouts.

Since, however, pencil and paper are cheaper than retorts and microscopes, and since there are no long periods of waiting in mathematical research such as are incurred in the other sciences by the construction of apparatus, or the time-consuming propensities of chemical reactions, or any of the thousand and one petty worries which make the hair of the laboratory worker turn gray before its time, there is one great advantage with the mathematician: he may blunder to his heart's content, waste time in asking questions which he cannot answer, fumble and bungle and muddle, and if he can salvage one or two good ideas from this wreckage, neither he nor anyone else is a penny clear of error, if he welcomes every ghost of a shadow of an idea that comes his way, and tries it before casting it aside, he suffers no harm but great good; for it is just these waifs of notions that may furnish the new point of view which will found a new discipline or reanimate an old. He who lets his sense of the mathematically decorous inhibit the free flow of his imagination cuts off his own right hand.



# EXPERIMENTAL STUDIES OF ATTENTION, ESPECIALLY THE DEVELOPMENT OF CONCENTRATION.

By

A. B. FITT, M.A., Ph.D., Professor of Education,  
University College, Auckland, N.Z.

In the year 1917 the author was lecturing a good deal in the University of Melbourne upon the subject of physical and mental growth and development, and, realising the small amount of exact knowledge we possess in several fields of the subject, determined to conduct an investigation to throw light on at least one phase of the problem. I proposed to study the development of the concentration of attention with boys and girls from the age of seven years to the adult period.

For this purpose the well-known cancellation test was given to about 1000 boys and girls and men and women students, the former from two large State primary and two large State secondary schools, and the latter from Melbourne Teachers' College. The test consisted in cancelling two letters, wherever found, in an unknown printed text, the work being carried out with the usual instructions, to work as quickly and at the same time as thoroughly as possible. The work of cancelling was continued, after a brief preparatory test, for 30 minutes, so that the capacity for prolonged concentration and resistance to fatigue-effect as well were measured. To assist in the analysis of this prolonged concentration a signal was given to the workers every five minutes when a mark was made on the sheet showing the place they had arrived at. Thus the 30 minutes' task was divided into six five-minute periods, enabling the fluctuations in work-capacity, hence in concentration, to be measured throughout.

This test provides two separate measures, one a quantitative one of the amount of work covered or of the speed of work, the other a qualitative one of the accuracy of the work. They are not, of course, independent measures, for increase or decrease in one naturally tends to influence the other in the opposite direction. If one estimates the quantity or speed of work as a percentage of some definite maximum task and takes as well the percentage of accuracy, the measure of concentration is obtained by taking the average of these two measures, for thus is the full joint effect of the two factors obtained.

Below (Table I.) are given the detailed results. It should be mentioned that the averages for each group of subjects for each age (boys or girls) were taken from the separate results of about 40 subjects.

TABLE I.—(a) BOYS.

Ages	7	8	9	10	11	12	13	14	15	16	17	19	20	21 and over	Av. for all ages
Speed ..	23.0	23.5	28.6	30.5	56.8	39.7	44.0	48.8	55.1	58.4	66.2	65.8			43.4
Accuracy ..	91.5	89.4	91.3	92.3	91.6	92.2	93.5	94.2	95.2	95.9	97.3	96.1			93.4
Average ..	57.4	56.4	52.9	61.4	64.2	65.8	68.7	71.4	75.1	77.2	81.7	80.9			68.4

(b) GIRLS.

Ages	7	8	9	10	11	12	13	14	15	16	17	19	20	21 and over	Av. for all ages
Accuracy ..	24.5	23.1	29.3	33.7	39.0	43.8	48.8	54.4	60.2	62.8	65.0	74.8	73.1	74.8	50.5
Speed ..	92.1	88.9	91.9	91.8	91.5	91.9	93.8	94.6	93.1	95.3	95.9	95.7	95.1		93.3
Average ..	58.2	55.9	60.5	62.7	65.2	67.8	71.2	74.4	76.6	79.0	80.5	85.2	84.1		71.9

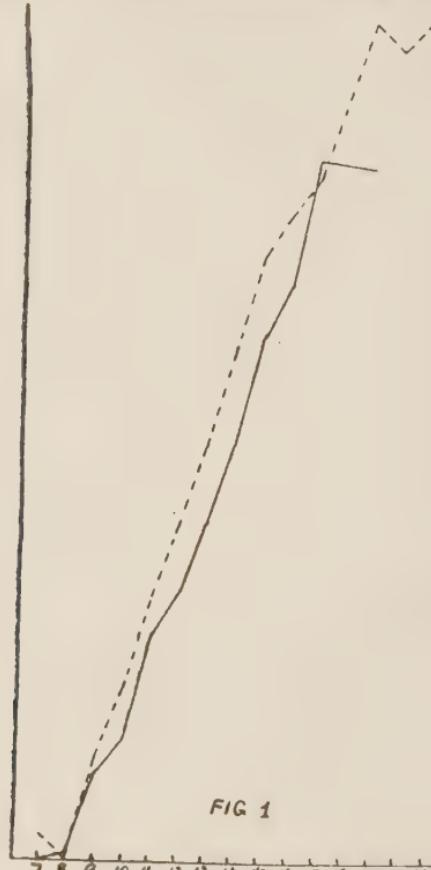


FIG. 1

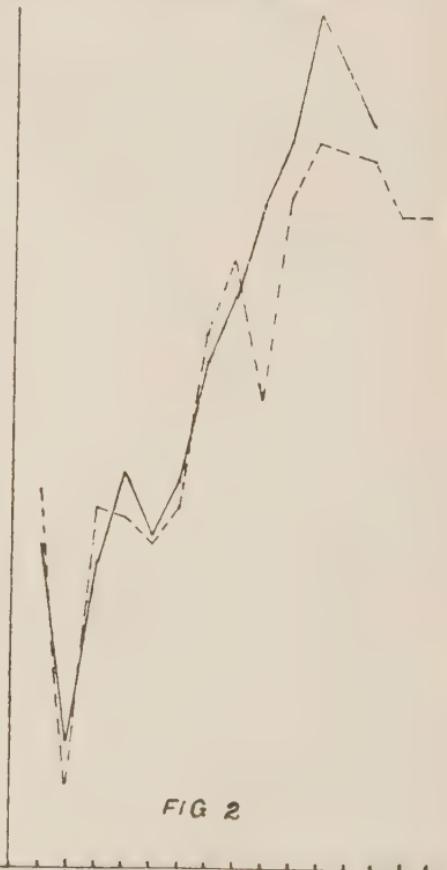


FIG. 2

Fig. 1 represents Speed, Fig. 2 Accuracy (Table I.). In each figure, the broken line represents the results for girls, the unbroken line the results for boys. The abscissae are ages. The higher the curves the greater is the speed (Fig. 1) or the accuracy (Fig. 2).

When one compares the speed and accuracy factors throughout the years in the case of the boys and girls a very interesting and important difference in the working capacity of the sexes is revealed. In the main the girls show superiority over the boys in regard to speed but inferiority in regard to accuracy. The girls' superiority in speed shows out in 10 of the 12 periods which may be compared and brings an average speed of 50.5% for all years as contrasted with 43.4% (a difference of 7%) in the case of the boys. The boys' superiority in accuracy is found in eight of the 12 periods although it amounts to a difference of only .1% in the average for all years. Still this gains so much more significance when one notices the way in which the boys and girls overhaul each other in their own strong growth periods. For example, the boys are down in the critical adolescent periods of the 13th and 14th years, but once this stage is over they over-reach the girls strongly. Thus there is here a distinct difference in the type of mental activity—the boy's type is slow and sure, the girl's is quick but less certain. Surely this is bound up with the frequently accepted notion of boys' general superiority over girls for mathematical work. It is clear that the average girl is not inclined to ponder sufficiently long to allow the more difficult generalisations to develop.

This same difference seems to be borne out by the kind of evidence we have had from such people as bank managers frequently of late. Many, in summing up their experience of women bank officials through the war years, whilst praising their eagerness and efficiency for the ordinary work, drew attention to a peculiar weakness and inaccuracy just at the most critical times of hard pressure. The above experimental facts point to a distinct difference between boys and girls and men and women in their capacity for concentration just at a stage when social organisations and a few psychologists are inclined to stress their similarity. A glance through the averages for all the periods shows that the girl and woman does more work of this kind but less accurately. She excels in quantity, the boy and man on the average in quality.

The following table (II.) presents an analysis of the speed and accuracy factors throughout the six five-minute sections of the 30 minutes' continuous task. The investigator's object in getting this analysis was to see whether age played any part in differentiating the so-called work—or adaptation—types, to see, viz., whether, although Kraepelin and others point out that amongst adults there is the slow-adapting, the quick-adapting and the medium-adapting type (with possible other variations), it might not be the case that there is a characteris-

tic adult type as contrasted with that of the child at different stages in development.

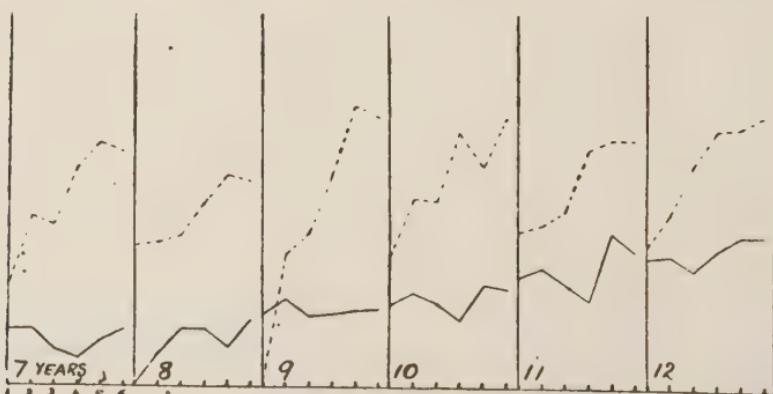
TABLE II.—(a) BOYS.

(Speed not indicated in %, but in absolute work-units.)

Period	7	8	9	10	11	12	13	14	15	16	17	18	19	20
I. Speed	113.6	71.7	125.2	132.7	154.8	168.7	184.1	212.0	237.9	260.4	271.8		306.0	
Acc.	88.5	89.8	85.1	89.4	90.3	89.9	92.3	93.0	94.7	95.5	97.2		96.8	
II. Speed	114.2	95.5	136.8	141.8	161.1	170.8	179.0	196.8	211.1	209.2	235.5		250.9	
Acc.	90.8	89.9	89.5	91.4	90.5	90.9	92.3	92.2	94.0	95.1	96.5		96.1	
III. Speed	98.3	114.4	124.4	133.6	148.9	150.6	180.0	196.6	250.0	248.5	295.2		298.6	
Acc.	90.5	90.1	73.2	91.3	91.0	92.1	92.6	94.4	95.3	96.0	97.5		96.6	
IV. Speed	92.4	114.0	115.8	121.6	156.7	175.2	193.0	222.4	250.5	260.8	298.6		303.1	
Acc.	92.4	91.2	92.2	98.7	93.1	93.4	94.5	95.0	95.9	96.3	97.3		96.3	
V. Speed	101.4	99.6	128.6	148.7	188.1	187.0	212.0	225.1	256.0	265.1	311.1		299.6	
Acc.	93.3	92.2	94.6	92.5	93.4	93.5	94.2	95.1	95.4	96.2	97.5		96.0	
VI Speed	113.3	120.4	129.9	145.9	174.5	187.8	215.5	240.2	275.5	305.2	340.8		318.2	
Acc.	93.0	92.0	94.2	94.2	93.4	93.9	94.8	95.2	95.9	96.2	97.4		96.3	

(b) GIRLS.

Period	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21 and over
I. Speed	113.9	77.3	121.8	147.5	173.0	185.9	205.1	240.9	259.7	271.0	277.5		350.0	349.2	553.7
Acc.	88.5	87.9	87.7	89.7	89.6	90.5	92.9	93.6	92.9	94.1	96.4		95.6	95.6	95.5
II Speed	121.5	93.4	136.7	159.6	172.2	175.7	192.3	213.6	236.8	226.7	228.6		276.4	272.2	259.9
Acc.	93.0	88.9	91.3	90.6	89.9	90.9	92.2	93.2	91.6	94.3	94.9		95.6	95.6	95.2
III. Speed	109.3	116.3	119.0	142.9	162.8	181.9	195.9	228.9	257.8	274.7	283.4		334.9	326.4	334.0
Acc.	92.5	90.2	92.0	92.2	90.3	91.1	93.5	94.4	93.2	95.0	95.5		95.6	95.8	95.5
IV. Speed	101.8	107.7	132.7	147.7	167.3	197.7	213.4	247.7	271.8	279.5	284.5		337.5	324.0	331.5
Acc.	93.6	90.0	92.1	92.9	92.7	93.6	94.7	95.5	93.8	95.9	96.5		96.5	96.2	95.8
V. Speed	103.5	101.4	131.7	148.2	189.4	205.8	288.6	253.9	286.8	289.5	301.6		335.4	327.0	337.8
Acc.	94.5	90.0	93.1	94.1	93.7	93.4	94.7	95.4	93.5	96.4	96.8		96.2	96.1	95.0
VI Speed	117.6	114.9	149.9	166.6	186.3	216.6	251.1	261.0	284.9	317.0	333.6		341.6	335.2	348.6
Acc.	95.1	90.5	92.4	94.6	93.1	93.5	94.6	95.9	94.1	96.2	96.9		95.5	96.2	94.7



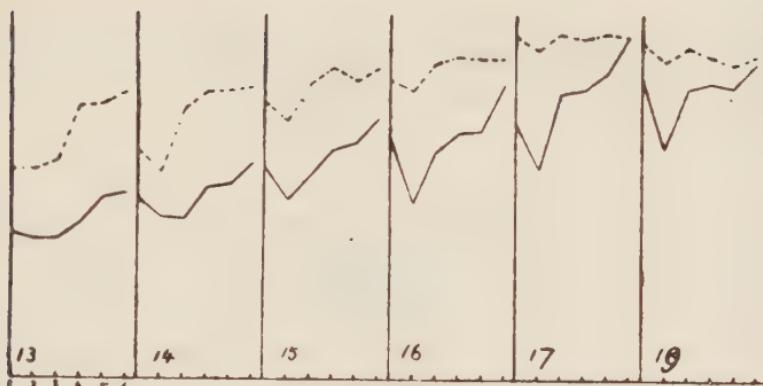


Fig. 3.—Fluctuations in Concentration during six 5-minute periods of continuous work. These curves show the results obtained with boys only (Table II., a), the broken line representing accuracy, the unbroken line speed. The abscissae indicate the successive 5-minute periods. The higher the curves the greater is the speed or accuracy.

A glance through Table II. (along with Fig. 3) shows that there is a marked differentiation in work-type corresponding to age. In fact the type of the 7-year-old child is absolutely different from that of the 19-year-old youth and the adult, and the intermediate stages show a gradual transition from the one to the other. Whereas the speed-curve of the 7-year-old varies but little whilst the accuracy-curve rises steadily from the beginning to the end of the task, in the case of the adult the accuracy-curve remains fairly steady whilst the speed-curve fluctuates and shows a rising tendency. The transition from the one type to the other is found probably best at the 13th year, a typical adolescence-year. A glance at the graphs of the earlier years shows that the speed and accuracy curves together present a broadening-wedge formation which changes slowly till at the 13th year the formation is parallel, and from then on it changes slowly to the opposite shape of a narrowing-wedge.

Thus the child-type is that of a slow-adapter from the point of view of accuracy and the adult-type is that of a fairly slow-adapter from the point of view of speed. If, however, one considers the joint effect of speed and accuracy, one finds that the child-type is slow-adapting, and the adult-type is quick-adapting. The quick fall at the second period with a corresponding quick rise at the third for both speed and accuracy in the cases of the groups from the 14th year on is particularly indicative of this quick-adapting type, nothing like it being found in the earlier groups.

To summarise: (1) The first definite standards of the development of concentration have been presented. (2)

The type of mental activity for the child is that of a slow-adapter which changes gradually year by year to that of the quick-adapter, the characteristic adult-type.



#### NOTES BY THE WAY. No. 4. An Artist's Philosophy.

Given faith that conscious will is at the helm of human affairs, then a definite attitude must result before the spectacle of humanity; but if the mind be built to accept only unconscious Law as controller, the outlook differs, and a resolute trust may develop in man as ultimate arbiter of his own destiny. Neither assumption can be proved nor disproved; but the relation of a controlling, guiding Spirit to the Universe lies open to doubt; its subjection does not; and building on this latter certainty, I discovered in the evolution of the moral principle, full cause for trust and hope.

Observation has convinced me that moral evolution is upward, despite massive, contemporary evidence to the contrary. For the War and the peace alike I recognise as a transient paralysis of human reason, not its negation. The War was an attack of familiar maladies for which man's own errors of ignorance were to be condemned, not the laws of his being; but it was an unutterable infamy and disgrace to him for this reason, that it proves him to be lagging behind the time-table of moral evolution. Ere now he should have outgrown his moral stature, and the causes of his tardy progress, his centuries of loitering in the desert, are as plain as pitiful. An impartial ethics can point to where his faith took the wrong turn; but progress in righteousness is only delayed; I have seen dawn upon the mountain tops too often not to trust that it will presently descend into the shadowed homes and sleeping hearts of men.

Fortified by this opinion—the only opinion I ever clung to—my instinct turned from the way of least resistance on easy and level lands, and strove to climb, to sacrifice without regret the highest, best, most hopeful, as life itself actually does. Thus only is the vitality of the creator proved in his creation and tragedy achieved, which, according to the measure of an artist's endowment, is clean, cathartic, inspiring, and obedient to the laws and realities of things as they are. Irrationalism chokes under this atmosphere: only the humanist can breathe it.

# PSYCHO-ANALYSIS AND RELIGION.\*

By

The Rev. N. J. COCKS, M.A., Sydney.

**O**F the relation of these two to one another, Psycho-Analysis takes religion for granted, according to the outlook of the investigator. He may assume it to be a cathedral that has had its day, or a temple that has not yet come to its own. Similarly Religion has little to say about Psycho-Analysis, partly because the subject is so recent, and partly because its strong association with sex have made Protestant Ministers at least rather shy of it. A Roman Catholic teacher has put forth the claim that Confession is "an anticipation of Psycho-Analysis," and has hinted that where confession is not observed there is real need of Psycho-Analysis. And Pfister is urging that Jesus was the first Psycho-Analyst; and that His methods are in line with the latest wisdom of this new science.

A comparison, however, requires to be made of the two, Psycho-Analysis and Religion in action.

Then they will be seen to be aiming at somewhat similar results, though it may be with considerable divergence of method, for both seek the setting free of a Distracted Soul. Both would bring a mind introverted out into reality. Both would make use of the stored up energy of the Unconscious, "a power sufficient to build a new earth."

It may be well then to place side by side a few cases in which Psycho-Analysis and Religion have respectively been at work. The cases of psycho-analytic cure are cited in outline from well-known authorities; the others are given from local personal experience. We take for granted that both activities are being used with goodwill. "It is as necessary for a psycho-analyst to have a clean mind, as for a surgeon to have clean hands," well says Isidor Coriat. And we assume equally that because a man strongly believes in the content of dogma, he is not thereby any kind of intellectual derelict. Freud is said to have come to the discovery of psycho-analysis, a discovery claimed to be fraught with as momentous consequences as the discovery of America by Columbus, while investigating a case of stubborn hysteria. He found the patient tangled in a web of fantasy involving every process of life and that could not be broken through by any means at his command. So Freud sought for the cause of the trouble; why was the mind

\* Read before the Australasian Association of Psychology and Philosophy, at its first General Meeting, held at Sydney University, May, 1923.

so shrouded, so cut off from life? He found she had had a painful sex experience from which she escaped into this condition that would ultimately become one of almost complete unconsciousness, then madness or death. By degrees he was able to bring the hidden painful experience to light, and then to dissolve it, until the patient was able to face life again unafraid.

Alongside of this put another case. A young-middle-aged woman had suffered a deep disappointment, and having gone through a long, lonely struggle for her little children, collapsed into hysteria. She became so ill that a capable doctor said unless the spell could be broken she would be insane or dead in a few hours. The task was then left to a minister to try and save her. He brought every power in him of control and sympathy to bear, and waited for an opportunity. By a softly spoken word of friendly irony he managed to reach her consciousness. It is said hysteria can only be broken by a strong novel emotion. The spell was broken; he reminded her of her children. She came out quietly to live for them, a restored soul. It must be mentioned that no pain, nor noise, no prayer nor pleading of the children had reached her. She had to be caught by something unusual and then led back to life. The same result accomplished by the method of psycho-analysis, slowly and thoroughly, working by the investigation of dreams, by transference, by suggestion, was here accomplished by a swift act of goodwill.

Another case of parallel action may be cited. Baudouin in his treatment of "Alexander" shews how he first elicited the existence of the *Edipus complex*—an abnormal dependence of the man on his mother. During the course of the analysis, and as a next stage the patient became homo-sexual in tendency. Then with the further dispersion of the complex, Alexander began to have normal thoughts, and instincts working in ordinary human channels, and he was left a fairly happy, useful man. Alongside of Alexander, put another young man, who not in fantasy but in rather terrible fact passed through somewhat similar stages and emerged. He was utterly dependent on his mother up to the time of early manhood. She completely "spoiled" him, making him look to her for attentions that should only have been given to a child or to an invalid. In addition she dedicated him to an artistic career and half worshipped his gift. When she died he fell into the power of a moral pervert who led him into the second stage, homo-sexuality. After a while though he still had rather a charming home and a fair amount of success he fell into public

disgrace, and came out of prison with only one person in Sydney, an old friend of his mother's, willing to speak to him. Distracted, pale, trembling he applied to a minister for as he said "spiritual help and comfort." He was told he must get manhood and be able to master the one who had got him so terribly down. Under this new personal control with hard work he gradually developed nerve and purpose. Then later he came face to face with the pervert—and went to meet him—master of himself and free. From that hour he was cured, and has entered life again well and successfully.

Here the stages of the two cases are similar. *Edipus complex, homo-sexuality, normal life.* And again I would suggest that by a strong moral effort the result slowly gained by psycho-analysis was swiftly gained by religion. And by both these agents much the same kind of result was sought. A soul imprisoned, distracted, tending to disgusting anti-social acts, was set free from his bondage to walk upright amongst men, and then to turn his psychic force in the direction of work that is beautiful. And yet with all this similarity of aim there is a considerable difference of method and setting, between the work of the psycho-analyst and the religious teacher.

Another case may be brought forward to illustrate and open up the investigation of this difference. A capable girl, through influenza and overwork, was so long unable to sleep that she was on the verge of insanity. To an extraordinary degree she had become unstable and uncontrolled. Two methods were open to the minister who had been consulted by the nerve specialist; one to analyse the dreams, the other to try and open up a new path of vital interest. Of the second the doctor said "simple enough, but a miracle." Yet a new interest was opened up, the powers of the mind were attracted to it, harmony ensued, and sleep returned almost at once.

And here it seems to me is suggested one of the greater differences between the methods of Psycho-analysis and religion. The analyst will patiently and thoroughly go to work to solve the complex and transfer to himself as spiritual trustee the forces that had been entangled, and when they are sorted out, will try to guide them in some real and adequate direction. Then his work will be fairly complete and satisfactory if only the activities of his patient have become normal. He will not be so much concerned about the objective quality of the patient's surroundings, if only he is fit and able to look after himself.

It is rather like the case of the surgeon who cures a man's broken ankle but does not prescribe for him where he is to walk with his new strength. Religion on the other hand is immensely concerned with the nature of the reality to which the one lately neurasthenic and infantile is now introduced. He seeks to arouse interest, absorbing interest, in the great sane beautiful things of life.

The natural opposition that thus exists between a method mainly analytic and another mainly synthetic, has been considerably intensified by want of wisdom. On the one hand there have been certain advocates of psycho-analysis who have frankly said "use your instincts, better use them any way than get them tangled up." And religious teachers holding strong views as to the evil of all anti-social and immoral acts have been antagonised by such advice. On the other hand the moral claims of religion have been put forward often so stiffly and unsympathetically that they seemed apart from reality—not laws of the very stuff and energy of life itself.

On both sides to-day there is a reapproach. Especially in England and France increasing emphasis is being laid by writers on Psycho-analysis on the necessity for the ordinary moral and social safeguards and sanctions. To quote Descartes—we will not pull down the old house till the new one is ready for habitation. And religious leaders are admitting freely that they have been less than human often in trying to be more than human; and have made the voice of God sound like ancient thunder rather than the song of the dawn.

Another difference between Psycho-analysis and Religion, an essential difference, arises out of the diverse methods employed by science and religion. To use an unconventional statement of this difference, it consists in the one employing the simplest terms, beginning terms, the other final terms to describe the same process. One says to a young tree "you are grown from an acorn in the mud"; the other asserts "you are going on to be a great oak with branches for the birds and shade for the cattle." So the aim of the psycho-analyst seems ever to be to reduce the elements of the unconscious to the barest possible. Freud says the fundamental stuff of life is sex craving—Libido. All nervous troubles arise from complications due to repression of that natural craving. All later psychic phenomena can be explained by reference to it as a kind of primal energy of the whole universe of intellectual and spiritual phenomena. Adler gives the will to power as

the fundamental instinct—and makes sex movements symbolic—a dressing up of the original assertive power. Coriat gives the name Craving—something wider and more general than wish or desire—to this original instinct.

But in all of them there seems to be the aim to reduce the emotions of the unconscious to the most crude and elemental form; to make that part of our nature "a vast unsatisfied, partly subdued, Titan urge" liable to break forth at times in volcanic force.

The religious teacher on the other hand would always prefer to use the highest terms available to describe the same occurrences. He would employ terms that have a noble connotation to present quite trivial facts, trying as he is to see each one of them in the light of Eternity.

Already however an approach here again has begun. Ribot the French psychologist to whom so much will ultimately be found to be due, suggests that the instinctive emotions range from the primitive hunger desire, fear, anger up to affection, the craving for efficiency, reverence. He with other French writers even go so far as to suggest that these instincts are present in a kind of embryonic form in the higher animals. Then here and there an English writer will assert that the desire to be better, the basis of morality, is a part of the elemental make up of humanity; not a complex or compound of different simple emotions that have become curiously blended in the movement of the ages, and it seems possible that in a while we may have the analyst looking not only for complexes arising from morbid sex movements, or from fear or excessive anger; but also from thwarted aims of an ideal nature.

It may be that the idea of God wrongly conceived will be found to be in itself destructive—and that not only because it represents some perversion of the thought of a father. Fletcher of Maddeley wrote to Charles Wesley that for eight days he had been in a pit of despair, because it seemed to him the Divine Glory could rather be served by his damnation than by his redemption. Have men too not ceased normal and happy development because they became obsessed by the thought that God being infinite must be unknowable to man—finite? It seems likely that religious experience can afford an immense enlargement and enrichment of the field of the psycho-analyst.

And the gain to religion may be equally great. There has long been the danger that the world with which religious experience is concerned should be regarded as outside the

ordinary claims of life. A man went to a minister with a grave confession. He made it because his days and nights had become unendurable by reason of an attempted crime, years earlier. But on careful enquiry it turned out the man thought he would have all that was needed if he received a conviction of forgiveness through the Church. It was very difficult to shew him that the relief he sought was only to be gained, if he were true to reality and faced the social consequences of his anti-social deed.

In other ways too religion is tempted to abdicate its sovereign task and become merely the comforter of tears—the custodian of that abode of man's bondage—the pleasure-pain ante-natal, infantile region of the unconscious life.

The Psycho-Analyst to-day challenges the Religious Teacher to present a world view that will adequately control the vast primitive instincts of the unconscious, and lead men out to a sane spiritual reality. We hardly require then Pfister to tell us that Jesus used the methods of Psycho-analysis in His teaching, or Baudouin to say that the "guide," the transferee came at last in a dream as the Master Himself, to be assured that with much difference of method and some quite essential oppositions Psycho-analysis and Religion are working together to set distracted souls free. Freud said long ago Psycho-analysis worked to take away "the power that abnormal processes have over a patient." Coriat remarks the end of the cure is that a patient must be left a "free independent personality"—and this is the end sought and sometimes attained in the redemptive service of religion.



## THE TASMANIAN MENTAL DEFICIENCY ACT.

By

H. TASMAN LOVELL, M.A., Ph.D., Associate-Professor of Psychology, University of Sydney.

IN at least one of its recent enactments the State of Tasmania has shown itself more advanced than the other States of the Commonwealth. We urge geological and other surveys of an economic and most necessary kind to be sure, but we do not seem to have awakened to the great necessity of a mental survey of our people. This omission is doubtless due to the fact that only comparatively recently has the instrument required for such a survey been brought by the science of psychology to that point of accuracy where it can be reasonably relied upon for diagnosis. Whatever may be said of mental tests, they can now, in the hands of capable clinical psychologists, provide a quite adequate mathematical index of the intelligence of each individual examined. The index is quite adequate for the classification of individuals into the broad groups of "very superior," "superior," "normal," "border-line," "feeble-minded," "imbecile," and "idiot." Such a classification will serve all purposes required by any State which admits that mental deficiency has a social incidence, acknowledges its responsibility for the care and treatment of the feeble-minded, and is prepared to undertake practical measures. Persons, rated as sub-normal after a careful psychological examination, become a problem to be met and solved by State activity. Especially true is this of the low-grade moron, the imbecile, and the idiot. Much of a State's activity has been wasted hitherto upon legislation which has assumed the existence of a sense of responsibility which does not and could not exist in a certain percentage of its citizens. There is required a different kind of treatment from that which assumes the sense of responsibility to be present. In short, it is with this percentage not so much a moral problem as a scientific one, dealing with definite causes which, through the progress in the study of psychology and mental hygiene, have now come under a measure of control. In New South Wales we are woefully unenlightened and woefully behind, both in the knowledge of these causes and in the application of that knowledge to practice. The welfare of a people demands that very low-grade mentality should not be perpetuated, nor is that welfare subserved when those who are feeble-minded are allowed to

reproduce their kind while those of higher grade intelligence restrict the number of their offspring. The country's welfare also requires that the opportunities offered to persons of low-grade intelligence for the commission of anti-social acts should be reduced to a minimum. Sentimentality should prevent no State from accepting this responsibility to posterity. Finally, appropriate treatment will render mentally deficient persons healthier and happier, and will provide the kind of education most suited to their case.

But it is first necessary to determine what persons are feeble-minded and to what extent they are so. It is this progressive purpose which the State of Tasmania has conceived and which it is energetically carrying out.

In 1920 there was presented to the Parliament of Tasmania and passed "The Mental Deficiency Act." This Act is based mainly upon the English Act. Further, during the year 1921, Dr. E. Morris Miller, Lecturer on Psychology in the University of Tasmania, with the concurrence of the Chief Secretary, visited the United States and Canada to inquire about the measures taken there to deal with mental deficiency. There now exists in Tasmania a highly effective statute, proclaimed on March 15th, 1922, and administered by a Mental Deficiency Board under the chairmanship of Dr. E. S. Morris, Director of Public Health. The other members of the Board are Dr. E. Morris Miller as Director of the Psychological Clinic; Dr. E. R. A. MacDonnell, Medical Superintendent of the Mental Diseases Hospital, New Norfolk, Mr. J. A. Johnson, M.A., Principal of the Teachers' College, and Mr. R. H. Crawford, Secretary for Education and Chief Inspector. The secretary to the Board is Mr. E. J. Tudor of the Public Health Department. Thus the constitution of the Board shows the embodiment of the principle that the problem is a complex one requiring the co-operation of medical, psychological and pedagogical experts for its solution.

The first Report of the Board, giving an official account of its activities for the year 1922-23 has now been published, and excellent work it appears to be doing.

The Board first proceeded "to ascertain and register those persons in the State who are defectives." Its policy is "early diagnosis and ascertainment of cases at school age." It hopes that "within the space of three years the schools' population of the State will have been surveyed. At the same time the Clinic is commencing a survey of institutions and homes where defective children and adults are likely to be found."

The Board states that "a residential training school for certain classes of defective children is indispensable." There are defective children capable of improvement by specialised education "who are legally excluded from the ordinary schools and others who . . . are quite unsuitable for the ordinary school classes. These require special instruction and treatment in a residential training school or institution. When such defectives, after receiving their training in an institution or training school, pass beyond the school age at 16 years, or even at 18 years, they are severally examined, and, according as they are socially efficient or inefficient, are released into the community under suitable supervision, placed under guardianship, or transferred among the adults of some institution or colony with which the school is connected."

"As it is not financially possible to provide training schools for the whole of a State's defective population, Education Departments usually establish special classes or schools for limited numbers. In these classes special instruction and training (similar to that in the training schools) are given." This instruction is "varied according to the individual child's mentality. . . . The whole trend of the instruction is towards helping the child to do and make things within his 'capacity to achieve' . . . to correct remediable physical defects; to form habits of cleanliness and neatness; to be industrious; and to respond readily to the social requirements of his simplified environment; in other words, to be at home with those about him, useful, and contented with his lot."

Appended to the Board's Report is a lengthy and interesting one from the Director of the Psychological Clinic to the Chairman of the Board.

"The functions of the Clinic as prescribed by the Act are the diagnosis of mental deficiency, the classification of mentally defective and other children, the instruction of teachers of special and other classes, and the study of mental deficiency, and for any other purpose appertaining thereto."

Of the functions of a psychological clinic the Director says, among other things:

"The main function of a psychological clinic is to examine the cases of exceptional children referred to it for the purposes of diagnosis, prognosis, and advice as to pedagogical training and treatment. These exceptional children comprise those who deviate from the normal, positively and negatively, are retarded in schoolwork, mentally dull and backward; who manifest abnormal or aberrant trends, resent reasonable discipline, show undue signs of obduracy or stubbornness, misbehave as psychopaths, delinquents, truants or inferiors, reveal marked instability and want of control during puberty and adolescence; in fact, who are in any way maladjusted to the ordinary conditions of life

whether in the home, school, or community. In short, the clinic is concerned with the mental hygiene of childhood.

"Any person, school, court, department of State, child welfare, or other social or philanthropic agency dealing with the problems of child life may refer cases to the Clinic for the report and advice.

"The examination is distinctively individual. The child is mentally and physically examined, and inquiry is made to ascertain the relevant hereditary and environmental factors. In the light of the findings differential treatment is determined. Advice is given as to home care, school training, vocation, or placement in a suitable environment. In appropriate cases diagnosis may be deferred, and the child placed under observation or given special opportunity for restoration to normality if possible, or at least for betterment of mental functioning. Where remediable physical handicaps are discovered, such as mal-nutrition, adenoids, goitre, nervousness, eye and ear defects, &c., the cases are referred to the proper quarter for suitable treatment and re-examinations are made when information is to hand from the physician that the physical deficiencies have been made good, or that no further improvement is likely.

"Another important function of the Clinic is the classification of mentally-deviating children."

"The Clinic, as its years of service increase, will amass a considerable amount of data concerning mental development, intelligence scales, and other means of mental measurement, percentages of children represented in the various classes, methods of examination, arrangements for selecting and discovering children for examination, means of making necessary inquiries, collection of statistics and their tabulation, and so on."

"In view of the importance of individual psychology, especially in reference to the mental hygiene of childhood, the cases referred to the clinic will afford exceptional means for clinical demonstrations in the teaching of psychology, and it is hoped that these facilities will be eventually availed of by the Departments of Psychology and Education in the University. The concrete presentation of individual reactions to definite situations is an indispensable method of psychological instruction, and enables the student, and particularly the teachers, to individualise the child and understand many of the prime factors underlying his deviations. Reference to the Psychological Clinics visited by me in the United States will show how closely associated they are with the departments of psychology and education in the Universities, and in most cases the professor in charge of the department assumes the directorship of the Clinic. It is, indeed, his psychological laboratory, where he is able to study the living individual, both in ordinary life and under the limitations imposed by laboratory practice."

"Finally, it is desirable to make clear that the Psychological Clinic, as distinct from what is usually known as a Psychiatric Clinic, is mainly psycho-educational in function; it is concerned chiefly with children, deviating from mental normality, either positively or negatively. The only adults it is likely to have referred to it are clearly cases of mental deficiency. On the other hand, the Psychiatric or Psychopathic Clinic deals with mental and nervous disorders, and is almost wholly concerned with adults. The functions of the Psychiatric Clinic or Psychopathic Hospital are the examination, diagnosis, and early treatment of incipient cases of mental illness, as well as a

limited number of a more serious and urgent nature which may ultimately reach a final destination in the mental hospitals."

There follows then a detailed account of the heads under which examinations are made, of the way in which the teacher, the medical examiner, and the Director of the Clinic collaborate, of the manner in which selection is made of school children for examination. The results of the year's work are represented in a series of interesting tables. On the question of the proportion of mental defectives to the total population the report says:

"The number of defectives in a community is not easily gauged, and the figures given by different authorities vary considerably. During the year we have surveyed a State primary school population of some 7300, giving the percentage of ascertained feeble-minded children in State schools as 0.75 per cent. This school population is mainly urban, and includes a few country districts. According to the later figures, coming from less-crowded and more prosperous areas, the percentage will probably fall below what is here stated. By the end of the incoming year's work we shall be in a position to gauge the percentage of feeble-minded grade more accurately. We shall endeavour at that time to ascertain the numbers of children attending non-State schools and the numbers below school age, so as to determine the total percentage of mental defectives of all grades among the child population of the State. We would expect that it will be somewhat below 0.5 per cent. These estimates are in keeping with conservative opinion in other countries, which is more and more gaining general acceptance."

It is not possible to reproduce here the detailed results as set out in the tables; but we can congratulate the State of Tasmania, its Mental Deficiency Board, and the Director of the Psychological Clinic upon a good year's work. It may be interesting to add that while the State of New South Wales has so far done nothing, yet a psychological clinic has been conducted this year at the Sydney University, by Dr. A. H. Martin, Lecturer in Psychology. It worked in conjunction with the Psychiatric Clinic, and gave excellent opportunity for the training of advanced students in psychology.



## FROM THE EDITOR'S CHAIR.

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IT is easier to give a formal definition of Philosophy than to set forth its meaning and function. Many definitions are merely labels, and a mind made up of definitions may still be an empty mind. It is like a shop window full of labels. Moreover, outside the more exact sciences a definition may be a trap or a *cul de sac*. In the moral and social sciences, the definition which ends one discussion should provoke another. Otherwise it is unprofitable and even perilous, if it leaves us satisfied with a false finality. A venturesome writer in a recent Review defined Religion as the "organised knowledge of God." This is not so happy as Huxley's definition of Science as Organised Common Sense, or as satisfying (to a socialist) as the definition of Capitalism as the organised service of the devil, but it provokes and challenges, and that is the main thing if discussions are to be real enquiries. Some definitions, like *dogmas*, seem made to be denied.

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To the three enquirers to whom we owe the interesting Symposium on the Meaning of Philosophy, Philosophy has a meaning because it has a function which cannot be performed by any other discipline, not even by Science. Some scientific writers seem to dislike even the mention of any Philosophy which is more than a putting together of the results of the special sciences. Their vision of the future is in one respect akin to the Marxist vision, for scientific determinism is twin sister to economic determinism, and the Idealist is to both of these, an object of polite indifference or angry contempt. The old warriors of the Comtist tradition and the young bloods fighting under the banner of Relativity and Realism do not differ very much in this respect, except in changes of terminology. Scratch the Relativist and the Positivist stands revealed in all his stark and Philistine ruthlessness. Mesopotamia was a "blessed word" to the literal pietist. Metaphysic is a good "cuss-word" with which to denounce any attempt to transcend the alleged limits of experience.

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No one would seriously accuse Mr. Bertrand Russell of Philistinism, a tendency wholly alien to the spirit of the greatest scientific Humanist of our time. But he, too, is sceptical as to the possibility of an "extra-scientific philosophy," which he regards as only the "expiring sigh of

theology." (*The Nation and Athenaeum*, September 8th, 1923.) To suppose that knowledge exists outside science is a "pious illusion." At the same time he asserts that scientific knowledge is not knowledge at all, except at the point where it touches our own sensations. All that does not enter the living circle of our sensory experiences is not "known" except as formal and abstract logical and mathematical properties may be said to be known. In other words, man for Mr. Russell has two circles in which to disport himself, the circle of his own immediate sense experiences, and the circle of formal inferences which are valid, but not knowledge. The fact that man is a citizen of two worlds, has always been a favourite theme for philosophical meditation and interpretation. The problem is to explain how this dual citizenship is consistent with the actual sanity of the individual, his undoubted control over the objective conditions of his existence, his indestructible confidence in the reality of law, his invincible faith in the supremacy of Reason, even when he is urging reasons why Reason cannot be trusted. "If she be false, oh then Heaven mocks itself." To Mr. Russell it seems possible that the true view of natural law is that it is a "human delusion." This is the voice of the dweller in the inner circle, who "knows" nothing of what goes on outside. When Science dissolves Matter into "sets of events," and eliminates Substance from its expurgated vocabulary, there seems little room left for a constructive scientific philosophy. All that it seems able to offer is a theory of knowledge to explain how we cannot possibly know anything at all. If there is only the specious present, why worry? Mr. Russell would be the most depressing of pessimists, if he were not (occasionally) such an irrepressible humorist. The gloom of the philosophical situation is relieved by a brilliant logical fantasia on ultimate facts and meanings. According to Dean Inge, Metaphysic requires an initial act of faith in human reason. He adds that Newman had not this faith. Neither apparently has Mr. Russell. But his superb mastery of the instrument recalls to us the words of Sir Thomas Browne in the *Religio Medici*,—"That mass of flesh which circumscribes me limits not my mind. While I study to find how I am a microcosm or little body, I find myself something more than the great cosmos. There is surely a piece of Divinity in us, something that was before the elements, and pays no homage to the sun."

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In a previous number of the Journal, one of our contributors referred to the possibility that it might disclose a

"new kind and temper of Philosophy under these southern skies." Here the reference was to Philosophy as an attitude, rather than a system or theory, although, of course, every theory or system that is a vital possession, implies an attitude, is a mode of behaviour. A philosophy cannot help being a creed, and a man's true creed is the one he lives by, not the form of sound teaching which he only "professes." Hence it has been said that the most important thing in a man's life is his philosophy, meaning by that his most general attitude to the universe or make-up of things. It is this attitude or mode of behaviour which saves or damns a man. Such a general attitude may not be a reflectively thought-out product of experience. According to Henry Ford, "the average worker wants a job in which he does not have to think." Thinking is hard work and brings with it irksome responsibilities. Perhaps the average man is also disinclined to think *outside* his job, and prefers to take his philosophy at second hand, as he takes his religion and his politics. When he turns to thinking seriously, it is because he has taken to a hobby, or developed a fad or a fanaticism. For the rest, he is moulded by the ethos of his time, is a typical representative of his group, and the psychologist and the sociologist can take his mental and moral inventory. There may be various centres of interest in his life, by means of which he is enabled to "carry on," but there is no true unity, and therefore he feels little or no need of a philosophy, except, perhaps, when he is shocked by the discovery that he is serving incompatible deities like God and Mammon. Even then he is usually content with a compromise which justifies neither the ways of God to man nor the ways of man to God.

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The German distinction between *Weltanschauung* and *Lebensanschauung* is a useful one to remember, when the question arises as to the possibility of a National Philosophy. In one sense, an Australian Philosophy is as ridiculous as a Christian Science. A scheme of the universe which is based on knowledge must be tested, and accepted or rejected, on grounds which are independent of national sympathies or prejudices. But it is permissible to think of Philosophy in relation to national life, as something more intimate and personal than an abstract metaphysic of objective reality. To speak of a Roman Philosophy is not the same thing as to describe Philosophy at Rome. A nation like an individual may develop a certain temperamental attitude to the problems of existence, which we may (with the permission of experts)

continue to call its philosophy of life. A nation's philosophy, like its art and its literature, is a mode of expression for the national consciousness. It is a specialised form of the national genius, and implies an historic past, functioning in the present in certain habitual reactions. It is a revelation of the soul of a people. We do not find, to anything like the same extent, in a modern industrialised community, the uniform habitual reactions which characterised the nations of the past. A distinctive national art or literature usually implies a comparatively simple social structure, and a comparatively simple common mind. Modern industrialised and commercialised civilisation tends to destroy the conditions under which a characteristic national art or literature arises. Anything becomes possible—the art of a Sargent or the horrors of a Saturday Evening Post. Only when the special environment or the spiritual situation of the community happens to evoke special responses or reactions, can we expect to find a "new kind and temper of Philosophy," or new forms of art and literature. In Australia we have literature in patches, but not a national literature. In poetry, we are only emerging from the stage of the ballad of the drunken sundowner and the lay of the gentle larrikin. Nor have we a national art, although we have the beginnings of aesthetic appreciation and artistic reproduction of the light and colour of the Australian landscape. We cannot be called an artistic people so long as we are content to put up with dirt and mean streets, eager to destroy the beauties of nature and to create new forms of ugliness to take their place. Do we think of Beauty as a necessity of life so that our souls are troubled at every form of ugliness, or do we think of it only in terms of personal adornment and vulgar display? "The flower of Art blooms only where the soil is deep."

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As for a national philosophy of life, we have inherited from our ancestors certain traditions and standards of honour, courage and fair dealing, which constitute a kind of moral capital. But apart from these has Young Australia any Philosophy of Life? When a new design in postage stamps was called for, it was suggested that the figure of a youth leaning against a post might be adopted as characteristic and symbolic. That was before the War, before the landing at the Dardanelles, and the stand at Villers Bretonneux. Should a similar crisis arise, we may trust our Australian manhood to meet it in a similar way. But somewhat different qualities may be required for facing and overcoming the difficulties of the coming years, a patriotism which is not national vain

glory or pride of empire, but in the words of the late Lord Salisbury, "a deep sense of responsibility for a treasure inherited and a trust transmitted." Eucken has spoken of the "insincerity of contemporary life, professing spirituality and yet wholly taken up with material things." Such indictments are too unqualified to be wholly accurate, but the question may be asked: Have we a Spiritual Philosophy, a Lebensanschauung capable of supplying guidance in the present, or hope for the future? If our actions and our professed ideals are at odds with each other, then our progress may be like that of Mr. By-Ends in the Pilgrim's Progress, who was described as rowing towards hell with his face set towards heaven.

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To most of us Philosophy has come through the philosophers, and is inseparable from its history, and from our own spiritual pilgrimage. To professional students and teachers of Philosophy, it will always be a special interest with its own peculiar technique and terminology. But it is also a universal interest, and the History of Philosophy is the record of those Master Spirits whose work might be described as spiritual stocktaking on a grand scale. Their concern is with the spiritual values of life and existence, those "imponderables" which do not appear in the national ledgers, but which, if they disappear from the national life, mean national degeneration and decay, it may be death. To disregard them is to try to circumvent God. The Roman Empire fell not because the barbarians were stronger than the Roman legions, but because the Empire was rotten at the heart. Its powers of resistance were weakened because it had lost its morale. What constitutes a nation's morale it is hard to say. It is not one quality so much as a combination of qualities. There is "something which in religion is called righteousness, in law, justice, and in common life honesty," and it is these in their peculiar union and fusion which keep a nation's soul alive, and make it strong, strong within and without, strong enough to resist the external enemy, and also strong enough to subdue those enemies which make for dissension and disorder within. Now it has always been the work of philosophers to deal with the ultimate grounds of conviction which the practical man, the politician, and even the preacher and the prophet take for granted. They are often pestilent because persistent fellows, taking stock all the time, and setting it down for the guidance of the ages. But in their day and generation they often share the fate of the prophets. Not merely may the philosopher be without honour among his own people, but he

may have to meet the charge of being a bad citizen, in so far as he puts something above his country, principle before expediency, and eternal values before immediate interests. And there has sometimes been apparent justification for the charge. A man who declares that his citizenship is in heaven does not thereby free himself from mundane responsibilities and the duties of his station. The pacifist may be a saint, but he is sometimes a sinner, if not against the inner light, against the light of common sense, and the fitting proportion of things.

In pre-Federation days we were told to rise above our parochial and provincial points of view, and think "continentally." And still later, we were urged to think "imperially," in terms of that glorious federation to which we belong, in which citizenship does not mean divided duty and in which patriotism need not become less intense, because its reach is wider than the bounds of city or State or Commonwealth. The vision of the philosopher takes an even wider sweep, for he bids us think in terms of Humanity. And Australia cannot be true to herself if she is false to Humanity; that is, if she forgets the eternal values of the Spirit, the Ideals of Truth, Goodness and Beauty. What has Australia to do with Philosophy? If Australia has nothing to do with these, then and only then has she nothing to do with Philosophy. There are times when duties seem to conflict, and when we do not see clearly which is the higher and the more urgent duty. There are times when the local patriotism seems to point in one direction, and the larger patriotism in another. There are times when the eternal values seem bloodless abstractions, and the call of the Ideal sounds thin and feeble as if it came from distant inter-stellar spaces. Then it is good to remember that we have a heavenly as well as an earthly citizenship. Lowell, speaking to the American people during the crisis that preceded the Civil War, reminded them that their true country was "bounded on the north and south and east and west by Justice." "We are," he continued, "inhabitants of two worlds, and owe a double but not a divided allegiance. In virtue of our clay, this little ball of earth exacts a certain loyalty of us, while in our capacity as spirits, we are admitted as citizens of an invisible and holier fatherland." We shall not be worse but better Australians, if we keep in mind that patriotism of the soul on which philosophers insist, that we are also citizens of that "ideal realm" which we represent to ourselves under the names of Truth and Goodness and Beauty. It is in virtue of these universal and spiritual values that this Australia of ours can become a Land of Hope and Glory.

## REVIEWS AND NOTICES OF BOOKS.

**MY LIFE AND WORK.** By Henry Ford, in collaboration with Samuel Crowther. First Australian Edition, 1923. Angus and Robertson, Sydney. Pp. 291.

The first interest of this industrial epic is the simple human interest in the man Henry Ford. He was born on a farm in Michigan, and he tells us that his earliest recollection is that "considering the results, there was too much work on the place" (p. 22). In his youthful experiments with power machines, his ultimate aim was to produce something which would make farm work easier, and in particular would do away with the horse plough. Circumstances forced him to manufacture the "Ford car" first; but he always kept in mind his early object, and in 1922 the "Fordson" tractor for ploughing was on sale in U.S.A. at 395 dollars. The American farm on which ploughing is done with horses will apparently be a curiosity in a few years' time. We learn, also, of an early interest in watches. At 15 Ford could do almost anything in watch repairing. Had he gone into the manufacture of watches instead of cars, as he once thought of doing, there would probably now be an excellent Ford time-keeper on the American market for 25 cents, though Australians would, of course be paying much more for it than this, in order "to protect Australian industries." His first car, a "gasoline buggy," made by himself, was running in the streets of Detroit, to the great interest of the inhabitants, in the spring of 1893. In 1903, a week after an exciting race with his wonderful "999," the Ford Motor Co. was formed. The development that followed is full of interest, but for that the book must be consulted. We frequently come on references to activities and interests lying outside the scope of car manufacture. There is a short discussion of the famous Peace Ship; we learn that Ford is a great bird lover (there are now 500 bird houses on the original Michigan farm); and we are interested in the experiment of a hospital that is to be primarily for patients, a hospital which, with no honorary medical officers, and with an inclusive charge of six dollars a day, is to pay for itself.

Leaving the personal factor, the chief interests of the book are economic, psychological, and social. The idea Ford wishes most of all to propagate is the idea of "service"; which means nothing sentimental, but, briefly, producing to satisfy needs. Ford found out (what socialistic writers have said often enough) that business is generally run, not for service, but for profit. And he agrees with those socialistic writers who have said that production should be, not for profit, but for use. If business is dominated by the idea of service, profits will take care of themselves. Ford uses his own success as proof.

Along with the idea of service goes another almost as important. Get rid of waste! What Ford has to say here is of special interest in view of modern attempts to apply psychology to industry. There is nothing new; but the main principles of "industrial psychology" are recognised and illustrated. For instance, by motion study and subdivision of an assembly process, a group of seven men was enabled to produce 15 times as much in an eight hour day as a group of 28 men had previously produced in a nine hour day (p. 89). When did any application of science produce greater results? What "industrial psychology" may yet do to cheapen cost of production is not realised. One of the principles most insisted upon by Ford is that, from the

point of view of getting rid of waste in production, subdivision of labour simply cannot go too far. So we learn that in assembly work "The man who places a part does not fasten it. . . . The man who puts in a bolt does not put on the nut; the man who puts on the nut does not tighten it" (p. 83). And so generally. Two aspects of this tendency toward subdivision are specially mentioned.

First, the more occupations become restricted to the continuous repetition of a few simple movements, the less trade skill they require. 43% of all the jobs in the Ford works require not more than one day of training, another 36% require from one day to one week, and another 6% require from one week to two: which means that 85% of all jobs require not more than two weeks to learn (p. 110). Only a few jobs require great trade skill. This means pretty well the end of the long apprenticeship methods, except for a very few. While this may seem an undesirable development, it has implications which at first sight are not obvious. For instance, it makes possible the profitable employment of the physically unfit. It was found at one time that out of 7,882 jobs in the Ford works, 670 could be filled perfectly well by men without legs, 2,637 by men with only one leg, two by men without arms, 715 by men with only one arm, and 10 by blind men (p. 108). In one instance a blind man, who was set to count bolts and nuts prior to shipment, did his work better than two men who were not blind (p. 109). "There are more places in subdivision industry that can be filled by blind men than there are blind men. . . . It is frightful waste to put the blind at weaving baskets" (p. 209).

Secondly, the monotony involved in processes that have been much subdivided is usually considered extremely undesirable. Although Ford sees that all jobs involve a considerable amount of repetition, he admits that, to himself, the prospect of repetition work of the type occurring in manufacture is "terrifying" (p. 103). But he thinks that the number of persons who feel like this is very small. It is these persons, however, who have denounced industrial work as soul-destroying. The vast majority of men don't want to think, they don't want to create, and apparently they do want monotony. Ford cites one man who had been doing the same simple process for "eight solid years" and yet "stubbornly resists every attempt to force him to a better job" (p. 106). There are undoubtedly cases of this sort. But how frequent are they? For there are also men who seem unable to remain for any appreciable time in any job. Doubtless the building up of a great manufacturing industry does not allow a man much time to think. And that Ford has not properly sifted his observations in this connection is suggested by the fact that in different parts of his book statements about the general attitude towards monotony amount to explicit contradictions. Thus he says: "The vast majority of men want to stay put. They want to be led. They want to have everything done for them, and to have no responsibility" (p. 99). Yet later we read: "People do not stay put. That is the trouble with all the framers of Socialistic and Communistic, and of all other plans for the ideal regulation of society. They all presume that people will stay put" (p. 142). Apart from the inconsistency, doesn't subdivided industry, as well as "socialism," "presume that people will stay put"?

The strength of the creative impulse can easily be over-emphasised and has been over-emphasized by writers like Ruskin and Morris. It seems to be weak in most men, and hence a system that gives no scope to its activity will soon bring about its disappearance except in persons

in whom it is strong. Ford is therefore probably right as to his facts, and also in saying that he "has not been able to discover that repetitive work injures a man in any way" (p. 105). Nevertheless, in a different sort of life, such as agriculture, the creative impulse, even though generally weak, would not be repressed to the same extent as in subdivision industry. And notwithstanding all that Ford says about the harmlessness of monotonous work, we find that one of the tasks he sees before him is its abolition! (p. 278). Why bother about it if it fits in so well with the nature of "the vast majority of men"?

Looking at the whole picture in perspective, we feel that Ford is completely right in saying that "it is wholly desirable to reshape business on the basis of service" (p. 132). The modern tendency is to lay too much stress on mechanism. Mere organisation of industry or society will solve no problem, though this is not to say that all organisations are equally good. Men can wreck, just as men can work, almost any organisation. Ford's emphasis on the importance of the spirit animating an organisation seems altogether salutary. Apart from this, his book contains much that is suggestive for industry and social life, and perhaps not least for agriculture. It is a book for everyone.

—B.M.

"CONFLICT AND DREAM." By W. H. R. Rivers. Kegan Paul, London. 1923.

This book, appearing so soon after the lamented death of Dr. Rivers and dealing with a subject that is only lately attracting the degree of interest that it deserves, is of special appeal. And it seems to mark (if the present writer has any understanding of the present drift of thought in England) what one may perhaps call "an English School" in regard to the matter with which it deals. There has been a great deal of opposition to the views of Freud. But there has been little, so far, that attempts a constructive view, putting any other interpretation upon the facts, and at the same time giving them the prominence that they certainly demand. If the teaching of Freud places a false emphasis upon phases of infantile life that persists in adult life, then it is surely time for some one with the requisite knowledge to put a different emphasis, while using the facts. For it is certain that the method used by Freud has revealed much that the old psychology ignored.

"Conflict and Dream" is well printed, easy to read, interesting. It opposes the theory of Freud, but it is not bitter in its controversy. It can be recommended to the ordinary reader as understandable. And to the student it should be enlightening. To any well acquainted with the literature of the past ten years there will be little that is new. But the interpretation is new. And when a fresh interpretation comes from one so learned in ethnology and in medicine as Dr. Rivers it claims attention.

The main argument of the book is that dreams are attempts to solve conflicts that are disturbing the waking life; that the transformation of the latent content that takes place in the manifest content is the result of regression to infantile forms of expression during sleep; that sleep tends to put out of function adult forms of reasoning and thinking; that affect in the dream is determined chiefly by the degree of success that attends the solution in the dream. Dr. Rivers accepts Freud's distinction between the "manifest" and "latent" content, but he does not think that the change can be satisfactorily explained by the idea of a censorship exercised in sleep, because the latent content of the dream would be unacceptable if it were not disguised. Nor does he

believe that, in order to understand the dream, it is necessary to go back to the early life of the dreamer. Freud's theory that early sexual conflicts underlie all the later conflicts of life is not accepted.

In a short notice of this character it is not possible to go into detail upon all the points that will occur to those acquainted with Freudian literature. All the terms—such as "dramatisation" and "displacement" are treated in detail and the emotional character of the dream has a special chapter to itself. But what makes the book easy reading is that all the theory put forward is illustrated by dreams that are lucidly related and examined in view of the rival interpretations. The "presidency" dream, the "suicide" dream, the "cup and saucer" dream, the "London lectures" dream are some that recur to memory. The "cup and saucer" dream, especially, is interesting as the solution of a very workaday, understandable problem which provided a solution more satisfactory than that which Dr. Rivers had been able to reach without it.

Most of the dreams that have been met with in the English literature of the subject, have been made under the influence of the Freudian theory. And many people have never been in the habit of noting or recording their dreams except under the direct influence of an analyst. This, Dr. Rivers says, serves to account for the type of dream explained. But with scientific directness, when his own work in the war brought him into contact with soldiers, whose dreams were a means of dealing with their mental conflicts, he began a study of the subject that, starting from Freud, whose "Traumdeutung" he carefully read, led him to the modifications that are here recorded. A method of dealing with the "manifest content" of the dream, that is characteristic, is explained. On waking, and recalling a dream, Dr. Rivers was accustomed to continue in a dreamy half-waking state and let the images and thoughts that spontaneously presented themselves form the associations that revealed the latent content. Then, immediately, both dream and associations were recorded. He says, "Many of the scientific ideas that I value most, as well as the language in which they are expressed, have come to me in this half-sleeping, half-waking state directly continuous with definite sleep. When I began to analyse my dreams I frequently had a similar experience in which as soon as I was awake I found that I was already having, and had for some time been having, thoughts about a dream, the dream itself being clearly in my mind . . . . When I had reached what seemed to me to be the interpretation of the dream, I wrote out the analysis as fully as possible and except in a few cases, the exceptions being fully noted in my records, the complete analysis of the dream had been made and recorded before breakfast on the morning immediately following the dream" (p. 7 p. 9).

Enough has been said to show the mixture of scientific interest and naive directness of the man and the book. It is edited by Professor G. Elliot Smith and he adds two appendices where he thinks that the text would have suffered correction if Dr. Rivers had lived to revise it himself.

—E.A.A.

**THE MORAL SELF, ITS NATURE AND DEVELOPMENT.** By A. K. White and A. Macbeath, Lecturers in Moral Philosophy in the University of Glasgow, and in the Glasgow Training College. London, Edward Arnold and Co. 1923.

This is the latest volume of the Modern Educator's Library, edited by Professor Cock. Though it is designed for the use of Training

College Students it is only in the last chapter on Problems of School Conduct that the professional reference becomes explicit. This is not a defect but a merit of the book, for the worst kind of textbook for the teacher in training, is that which furnishes him "tips," short-cuts, and manufactured methods, with only a cursory, scholastic discussion of scientific and philosophical principles. The authors' preface modestly states that the book is primarily intended as a "background for the lectures and as a basis for discussion in tutorials." No doubt all textbooks of the kind require to be supplemented by the personality of the lecturer, and full and free class discussion; but the background in this case is far from being dull or drab, and the analysis, although occasionally somewhat over academic in style and method, is pleasant and stimulating reading, compared with the dry bones of the scholastic manual familiar to past generations of training college students. The ideal textbook of Ethics would combine the merits of Mackenzie's Manual, and Dewey and Tufts' Manual of Ethics, would be at once a philosophical and a sociological treatment of the subject. Perhaps the authors are more successful in their discussion of philosophical principles and in their psychological analysis, than in their presentation of the facts of moral life and development. The chapters on the Essential Features of Ethical Conduct as seen in the Life of the Race, and on the Institutions of the Moral Life are valuable and interesting, but require to be supplemented by such works as Hobhouse's *Morals in Evolution* and by the social and political writings of Bosanquet, Delisle Burns and others. The philosophical point of view of the authors is that of a balanced and moderate Idealism, somewhat similar to that of Hetherington and Muirhead's *Social Purpose*. Their psychological position may be summarised in the statement that they regard the Self as a "system of tendencies, the supreme good as their harmonious development, and duty as the demands of the whole upon the particular tendencies" (p. 74). The development of this position occupies the first part of the book, after which the "structural principles" previously discussed are considered "in their more concrete development in the relation of the individual to the social order, and the natural world—of both of which he is a member." The philosophical filiation of the authors is obvious in almost every chapter, e.g. in their definition of the moral life of the individual as a "continuous effort to mediate successfully between the finite and infinite aspects of his given nature. The universal or infinite self must be made concrete in habits and institutions, and the particular activities of the self must be proportioned and harmonised through their permeation by central ideals" (p. 107).

**THE GROUNDWORK OF TEACHING.** Edited by A. Mackie. Teachers' College Press, and Angus and Robertson, Sydney. 1923.

This is the second edition of perhaps the most important of the valuable series of publications for which the Australasian educational world is indebted to the Sydney Teachers' College. In addition, the records of the Education Society connected with the Teachers' College already number about half a hundred. Almost the whole of these are the work of members of the teaching staff of the College, and it is probable that no similar institution can show a better record, when the brief period of its existence is taken into account. The first great merit of *The Groundwork of Teaching* is that it is concerned with the future rather than with the past, with the problems that face the practical teacher and the student of educational theory in relation to practice. Every educational reform is, rightly considered, a stepping

stone to the next. Too much time is wasted at meetings of teachers in extolling the "new system" in contrast with the old, and in apportioning praise and blame. The second merit is the way in which the practical needs of the school, and the pupil are never lost sight of, even when the writer is apparently concerned only with abstract theory. And the third great merit is the way in which throughout the book, the varied tasks of the teacher, pedestrian and monotonous as they often seem to be, are considered from the standpoint of a scientific profession. This does not mean that the utilitarian is sacrificed to the idealistic. The school teacher, brought up on this book, will not be less a good master of his craft in that he is inspired by a proper sense of his high calling. The fine tone of the chapters on *The General Nature of Teaching*, by Principal Mackie, and on *The Vocation of the Teacher*, by Professor Allen is characteristic of the whole work. Two new chapters are added in this edition, one in which Dr. Cole summarises admirably *The Principles of the Kindergarten*, the other by Principal Mackie, on *The Study of Education*, which deals with the newer currents of educational opinion, more especially with the relation of "Intelligence Tests" to the practical problems of school organisation and classification of pupils, and to the various requirements of a rational system of examination.

The following books have been received too late for review in this number of the Journal:—

From George Allen and Unwin, London.

Primitive Mentality, by L. Levy Bruhl. Authorised Translation.

Malebranche's Dialogues on Metaphysic and Religion, Translated by M. Ginsberg.

A Psychological Retrospect of the Great War, by W. N. Maxwell.

The Dominant Sex, A Study in the Sociology of Sex Differentiation, by Mathilde and Mathias Vaerting. Translated by E. C. Paul.

From Methuen and Co., London.

An Outline of Psychology, by W. McDougall.

Psychology and Morals, by J. A. Hadfield.

From Angus and Robertson, Sydney.

The Handling of Words, by Vernon Lee. (London. The Bodley Head).



## JOURNALS RECEIVED.

**THE JOURNAL OF PHILOSOPHY.** Published fortnightly at Sub-Station 84, New York City, U.S.A. Yearly subscription, Four Dollars. Edited by Professors Woodbridge and Bush, Columbia University.

Vol. XX., No. 13, What is History? J. W. Swain. No. 14, Language, Thought, and Instincts; E. J. Swift. Art and Utility; S. C. Pepper. Mr. Moore's Realism; J. B. Pratt. No. 15, The Reality of Types; H. E. Mantz. A Defence of the Foundations of Psychology; J. S. Moore. No. 16, Concerning some faulty conceptions of Social Psychology; J. R. Kantor. Meaning and the Psycho-physical Continuum; H. L. Hollingworth. No. 17, What are the data and problems of Social Psychology? J. R. Kantor. A Perspective for the Study of Jewish Philosophy; N. H. Adlerblum. No. 18, On the Logic of Fiction; Morris R. Cohen. A Note of Professor Dewey's Theory of Knowledge; S. P. Lamprecht. No. 19, In Memoriam; Bernard Bosanquet; R. F. Alfred Hoernlé. Symbolic Relations in Thinking; H. L. Hollingworth.

**ARCHIVE FOR PSYCHOLOGY AND PEDAGOGY. UPSALA AND STOCKHOLM.** Vol. I., Parts 1-4, 1923.

Contains articles on—Psychological Paradoxes—From Psycho-analysis to Psychosynthesis; Conscious, Unconscious and Subconscious—Concerning the Theory of Tactile Localization—Relation between the time given to Instruction and the results of Intelligence-measurement in the Deaf and Dumb—Grammar and Logic—Father-Worship—The Attitude of Psychology to so-called Psychic Investigation—Views upon Soren Kierkegaard—Concerning the validity of the 75. per cent. principle in the selection of Mental Tests—Modern views upon Religious Instruction.

**SCHOOLING.** Edited by A. Mackie and P. R. Cole. Teachers' College Press, Sydney. Vol. VI., No. 5. August, 1923.

Contents: Editorial Notes. An Elementary School on the Dalton Plan (P. R. Cole). Measuring Attainments in History (H. L. Harris). Types of Error in the Fundamentals of Arithmetic (H. P. Willcock). Psycho-analysis in relation to Education (A. Mackie).

**THE MEDICAL JOURNAL OF AUSTRALIA.** Sydney. Published weekly. Price, 1/-.

## NOTES AND NEWS.

Members of the Association are reminded that the present issue of the Journal completes the activities of the Association for the first year of its existence. To facilitate arrangements for the coming year, it is requested that subscriptions for 1924 be forwarded without delay to the Honorary Secretaries of the A.A.P.P., c/o Department of Philosophy, University of Sydney, N.S.W.

The prizes for the best Philosophical Essays have been awarded as follows:

The Pragmatist Theory of Truth. R. Anschutz, B.A. Auckland University College, N.Z.

The Relation of Repression to Mental Development. K. S. Cunningham, M.A., University of Melbourne. *Proxime accessit*—Ruth Thomas, B.A., University of Sydney.

Essays were received from New South Wales, Victoria, Queensland, Western Australia, New Zealand (Auckland, Wellington and Dunedin), and London. All the Essays received were meritorious compositions.

Dr. Scott Fletcher has been unanimously elected to the Chair of Philosophy at the University of Queensland. He is a graduate of Sydney and Oxford Universities. His predecessor in the Chair was Mr. Elton Mayo, who is now engaged in teaching and research work in America.

The financial stringency in the various Australian States is in some cases seriously hampering necessary educational development, while in others it is being made an excuse for ruthless and shortsighted retrenchment. In Tasmania a proposal was actually made that the University vote should be cut out altogether in the cause of national economy. In other States, scientific departments have been crippled by reduced expenditure for laboratory equipment. The Psychological Laboratory at Sydney University is still unprovided with an urgently required Demonstrator. All the University Libraries are suffering from inadequate funds. The multiplication of Departments means reduced individual allowances, and in some cases it is impossible to purchase even the most important works of recent publication.

The expenditure on School Education has also been severely restricted, often with a singular lack of foresight. In New South Wales the training of teachers, especially for the higher branches of school education, is suffering. The Education Gazette, which for some years had been redeeming the defects and sins of its earlier life, has had its educational matter in great part eliminated to save the cost of printing, and has become a meagre official bulletin.

The Melbourne University Philosophical Society closed its year's work with a lecture on Presuppositions, by Mr. P. R. Le Couteur, M.A., and two general discussions on The Meaning of Art, and Realism versus Idealism.

The Sydney Branch of the Australasian Association of Psychology and Philosophy held its final meeting for the year in October, when two papers were read on the Relation of Mental Deficiency to Delinquency, by Miss Lucy Firth and Miss Eileen Charles.

Dr. A. B. Fitt, Training College, Auckland, and formerly of Melbourne University, has been elected Professor of Education at Auckland University College.

Mr. J. L. G. Sutherland, M.A., has been appointed Assistant in the Department of Philosophy and Psychology of Victoria University College, Wellington, N.Z. Mr. Sutherland has been pursuing post-graduate studies at Glasgow and London Universities, during the past two years.

The Seventh International Congress of Psychology was held at Oxford, July 26th-August 2nd, under the presidency of Dr. Myers, who contributed the first article to the first number of this Journal.

The next International Congress of Philosophy will be held at Naples towards the middle of 1924. One of the sittings of the Congress will be dedicated to a solemn Commemoration of St. Thomas Aquinas.

Rudolf Eucken, although for some time Emeritus Professor, has not ceased from active philosophical work. He has just been lecturing before the University of Helsingfors, and will contribute an article on "The Relation of Philosophy to Religion," to the March number of this Journal.

Mr. S. C. Lazarus has been appointed to the vacant Lectureship in Philosophy at Melbourne University. Mr. Lazarus was a very distinguished graduate of the University of Melbourne, who afterwards proceeded as Rhodes Scholar to Oxford, where he has just concluded a three years' post-graduate course of study in Philosophy.

# Members of the Australasian Association of Psychology and Philosophy.

(Joining the Association between August and December, 1923.)

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